INITIAL STUDY /
MITIGATED NEGATIVE DECLARATION

OC Reclamation Mine Project

Prepared for:

Santa Ana Regional Water Quality Control Board

Prepared by:

Pacific BioScience, Inc.

and

associates environmental

October 2022

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SANTA ANA REGIONAL WATER QUALITY CONTROL BOARD
3737 MAIN STREET, SUITE 500
RIVERSIDE, CA 92501-3348

INITIAL STUDY / MITIGATED NEGATIVE DECLARATION Public Draft

BACKGROUND

Project Title:

OC Reclamation Mine Project

Application Number:

XXX

Applicants:

OC Reclamation, LLC, P.O. Box 15450, Irvine, CA 92623

Applicant's Contact Person:

Maher Zaher, (951)782-3204

General Plan Designation:

Resource Area

Zoning:

Sand & Gravel

1. INTRODUCTION

The Regional Water Quality Control Board (RWQCB) has prepared this Initial Study and Mitigated Negative Declaration (IS/MND) to provide the public, responsible agencies, and trustee agencies with information about the potential environmental effects of the OC Reclamation Mine Project (Proposed Project).

The Applicant is seeking a Waste Discharge Requirement Permit from the Santa Ana Regional Water Quality Control Board for impacts to Waters of the State. The issuance of the permit is a discretionary action as defined in the California Environmental Quality Act. Therefore, this document has been prepared in accordance with the requirements of the California Environmental Quality Act (CEQA) of 1970 (Pub. Resources Code, § 21000 et seq.) and the CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et. seq.). This IS/MND relies on expert opinion, technical studies, and other evidence to substantiate its findings.

1.1 Project Description

OC Reclamation, LLC, proposes to fill an abandoned open pit mine with inert material and grade the site to an elevation equal with the adjacent parcels. No further development of the project site is proposed.

The Proposed Project would occur in two phases and last approximately 4.5 years. During the first phase, the applicant would clear and re-contour the property. This phase would be conducted outside the least Bell's vireo breeding season (April-July), when the migratory species is not expected to occur within the project limits. A steep, un-vegetated slope currently descends to the toe of the Santiago Creek bank. This slope will be relocated from its current location, and an elevated bench with shallow ponds would be created to allow for a wider riparian and wetland habitat adjacent to Santiago Creek. The clearing and grading effort will last approximately two months. Habitat restoration and creation along Santiago Creek would begin following the grading of the project site. Native habitat would be created on the elevated bench and within the ponded area by installing the same plant species occurring at the bottom of the pit mine. The slope would be planted with native vegetation similar to the existing conditions elsewhere on the site. Non-native plants would be removed from Santiago Creek and along the banks throughout the property. The second phase of the project would include depositing inert fill material into the pit over a 4.5-year period.

1.2 Project Location

The project site is approximately 14 acres and generally located northwest of the intersection of East Santiago Canyon Road and Cannon Street within the City of Orange. It can be found on U.S. Geological Survey 7.5 minute topographic quadrangle map Orange. Santiago Creek bounds the project site on the north with residential development further to the north and to the south across East Santiago Canyon Road. Commercial development occurs to the west and disturbed open space further to the east across Cannon Street. The Proposed Project site is surrounded by development or disturbed open space. See Figure 1 Proposed Project Vicinity and Figure 2 Proposed Project

Location.

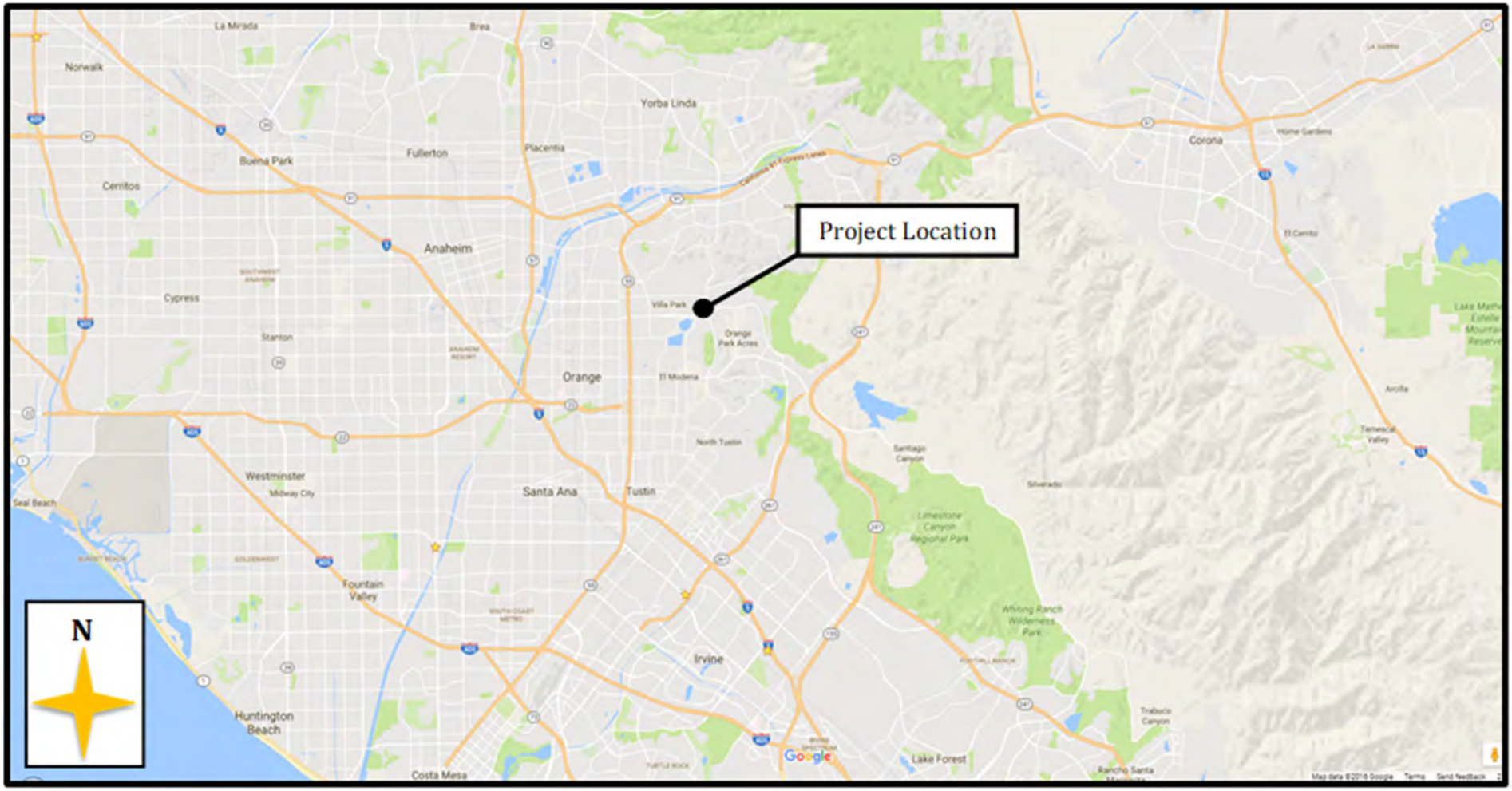

Figure 1: Proposed Project Vicinity

Figure 2: Proposed Project Location

1.2 Environmental Setting and Baseline Conditions

The Proposed Project site operated as an open sand and gravel mine for decades prior to operations stopping in the 1960s. Since that time the site has been graded and cleared of vegetation periodically with the most recent clearing occurring in approximately 2008 when the entire bottom of the mining pit was cleared of vegetation and graded. The open pit still exists today and access roads throughout the site continue to be cleared on a regular and frequent basis. The site is currently zoned for sand and gravel (S-G) according to the City of Orange Zoning Map (City of Orange).

Regulatory Environment

The Santa Ana Regional Water Quality Control Board is the Lead Agency under the California Environmental QualityAct (CEQA) with the primary authority for project approval. The following agencies have regulatory or review authority.

CEQA Responsible Agencies

- Santa Ana Regional Water Quality Control Board

CEQA Trustee Agencies

- California Department of Fish and Wildlife (CDFW)

The Applicant has coordinated with USFWS Carlsbad Office and completed an approved Low-Effect Habitat Conservation Plan for an incidental take permit for the endangered least Bell's vireo. This document can be viewed in Attachment A.

Studies for resources under jurisdiction of U.S. Army Corp of Engineers and California Department of Fish and Wildlife were conducted previously and applications for permits were submitted. These resource agencies determined no impact or de minimis impact within their jurisdiction would occur and therefore no permit would be required.

The project has applied for Waste Discharge Requirements (WDR) with the Santa Ana Regional Water Quality Control Board. WDRs allow and regulate the import of fill material and establishes minimum standards for load monitoring, waste and facility management and site maintenance.

A Jurisdictional Determination and Delineation was prepared in November 2020. Results from the report indicated that a total of 1.92 acres of Waters of the State under SARWQCB jurisdiction are found within the proposed project area. The combined total includes 0.92 acres of riparian non-wetland waters, 0.04 acres of non-wetland waters, and 0.96 acres of wetland waters. Identification of jurisdictional resources found onsite prompted the requirement for a Section 401 Water Quality Certification with the Waste Discharge Requirements from the Santa Ana Regional Water Quality Control Board.

2. ENVIRONMENTAL IMPACTS

The environmental factors checked below could be potentially affected by this project and are discussed in more detail in the checklist on the following pages.

☐Aesthetics	☐Agriculture and Forest Resources	☐Air Quality
☒Biological Resources	☒Cultural Resources	☐Energy
☐Geology and Soils	☐Greenhouse Gas Emissions	☐Hazards and Hazardous Materials
☐Hydrology and Water Quality	☐Land Use and Planning	☐Mineral Resources
☐Noise	☐Population and Housing	☐Public Services
☐Recreation	☐Transportation	☐Tribal Cultural Resources
☐Utilities and Service Systems	☐Wildfire	☐Mandatory Findings of Significance

2.1 Aesthetics

17. AESTHETICS: Would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Have a substantial adverse effect on a scenic vista?				X
(b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
(c) Substantially degrade the existing visual character or quality of public views of the site and its surroundings? Is the project in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?				X
(d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				X

2.1.1 Project Background

The Proposed Project site is an abandoned pit mine located near Santiago Creek, in the City of Orange. The site has native vegetation that supports wildlife.

The proposed project has developed renderings to show the existing condition and proposed view from the north of Santiago Creek facing south towards the project. The renderings are included in this section.

A berm will be created along the northern and eastern boundary as part of the first phase of the project. The berm will be planted with native vegetation and will provide screening of the fill operation.

2.1.2 Findings

(a) Would the project have a substantial adverse effect on a scenic vista?

The Proposed Project site, including the portion of the southern bank of Santiago Creek that is proposed to be relocated, cannot be viewed from public spaces. Additionally, this portion of the creek is not identified as a scenic vista in the City of Orange's General Plan. Therefore, no impact to a scenic vista would occur with the implementation of the Proposed Project.

(b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

California Department of Transportation Scenic Highway System Map was reviewed (https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways). The Proposed Project site is not part of a state scenic highway. Therefore, no impact to scenic resources within a state scenic highway would occur with the implementation of the Proposed Project.

(c) Would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? Is the project in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Page NR-7 in the City of Orange General Plan Natural Resources – Visual and Aesthetic Resources section states: "Portions of Orange are characterized by scenic vistas that include hillsides, ridgelines, or open space areas that provide a unifying visual backdrop to the urban environment. These "viewsheds" contribute to the City's identity and quality of life. The City will preserve open space areas and view corridors where possible and will encourage landscaping in urban areas to improve boulevards, neighborhoods, and commercial and industrial districts."

The Proposed Project site, including the southern bank of Santiago Creek, cannot be viewed from public spaces. Therefore, the implementation of the Proposed Project would not conflict with applicable zoning and other regulations governing scenic quality because the Proposed Project site is not within a scenic view.

(d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

There would be no lighting associated with the Proposed Project as construction activities would occur during daytime only. As such, no impact to views due to lighting would occur.

OC Reclamation - Orange, CA

View A

VisionScape IMAGERY
A Visualization Firm
visionscapeimagery.com

OC Reclamation - Orange, CA

View B

VisionScape IMAGERY
A Visualization Firm
visionscapeimagery.com

2.2 Agriculture and Forestry Resources

7. AGRICULTURE AND FOREST RESOURCES: Would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
(b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
(c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
(d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
(e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X

2.2.1 Project Background

According to the City of Orange Zoning Map County Zoning Plan, the Proposed Project site is zoned as Sand & Gravel. The closest area zoned as agriculture is located approximately 1.2 miles to the northeast.

2.2.2 Findings

(a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The Proposed Project is not located within Prime Farmland, Unique Farmland, or areas of Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. The Proposed Project is located in an area zoned as Sand & Gravel. There would be no impact.

(b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

The Proposed Project is located within an area zoned as Sand & Gravel. There would be no impact.

(c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

The Proposed Project is zoned as Sand & Gravel, and therefore would not conflict with existing zoning for forest lands or timber land. There would be no impact.

(d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

The Proposed Project does not involve changes which could result in conversion of forested land to non-forest use as no forest lands occur within the Proposed Project area. There would be no impact.

(e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

The Proposed Project is zoned as Sand & Gravel. No impact would occur.

2.3 Air Quality

2. AIR QUALITY: Would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Conflict with or obstruct implementation of the applicable air quality plan?				X
(b) Violate any air quality standard or result in a cumulatively considerable net increase in an existing or projected air quality violation?				X
(c) Expose sensitive receptors to substantial pollutant concentrations?				X
(d) Result in substantial emissions (such as odors or dust) adversely affecting a substantial number of people?			X	

2.3.1 Project Background

Air Emission generating activities at the Proposed Project will include Operations and Hauling. The Proposed Project will only use Tier 4 Final equipment onsite. Haul trucks will not be allowed to idle for more than 5 minutes, and the site will use a water truck to control dust.

To determine whether or not air quality criteria pollutants, Greenhouse Gas (GHG) and toxic emission impacts from implementing the Proposed Project are significant, impacts will be evaluated and compared to the criteria in Table 1. If preliminary analysis of the Proposed Project shows that overall emissions have the potential to equal or exceed any of the thresholds in Table 1, these potential impacts will be further evaluated in an EIR.

Table 1: SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds [a]		
Pollutant	**Construction** [b]	**Operation** [c]
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs), Odor, and GHG Thresholds		
TACs (including carcinogens and non-	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1	

carcinogens)	million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402
GHG	10,000 MT/yr CO_2eq for industrial facilities
Ambient Air Quality Standards for Criteria Pollutants [d]	
NO_2 1-hour average annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)
PM_{10} 24-hour average annual average	10.4 µg/m^3 (construction)[e] & 2.5 µg/m^3 (operation) 1.0 µg/m^3
$PM_{2.5}$ 24-hour average	10.4 µg/m^3 (construction)[e] & 2.5 µg/m^3 (operation)
SO_2 1-hour average 24-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)
Sulfate 24-hour average	25 µg/m^3 (state)
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)
Lead 30-day Average Rolling 3-month average	1.5 µg/m^3 (state) 0.15 µg/m^3 (federal) at or below 0.110 µg/m^3 through December 31, 2016 and at or below 0.100 µg/m^3 on and after January 1, 2017 (SCAQMD Rule 1420.1)

[a] Source: SCAQMD CEQA Handbook (SCAQMD, 1993), Revision: March 2015

[b] Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).

[c] For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.

[d] Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

[e] Ambient air quality threshold based on SCAQMD Rule 403.

KEY: lbs/day = pounds per day; ppm = parts per million; µg/m^3 = microgram per cubic meter; ≥ = greater than or equal to; MT/yr CO2eq = metric tons per year of CO2 equivalents; > = greater than

2.3.2 Findings

(a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

The main objectives of the 2016 Air Quality Management Plan adopted by the SCAQMD are to achieve compliance with federal Clean Air Act (CAA) standards for fine particulates ($PM_{2.5}$) and ozone. Key strategies to reduce emissions of $PM_{2.5}$ include direct source controls such as episodic curtailment of wood-burning fireplaces and open burning from agricultural practices, brush clearance, prescribed burns, along with emissions controls at combustion-based industrial facilities, reduction of ammonia emission from livestock waste, and transportation control measures to reduce vehicular emissions. Key strategies to reduce direct emissions that result in excessive ozone levels include: restrictions on coatings and solvents; restrictions and technological advances on combustion sources, restrictions and process improvements on petroleum operations and related fugitive VOC emissions; restrictions on multiple-pollutant generation sources, incentive programs and education. Several ozone reducing strategies target emissions reduction for various transportation sources, primarily through advanced control technologies, replacement of older fleets with newer, cleaner vehicles, use of alternative fuels, and vehicles powered by non-combustion engines, etc.

The AQMP assumes that new and existing operations are allowed under local General Plans and Zoning. The site is Zoned for Sand & Gravel extraction operations and the Project emissions profile is consistent with that type of operation.

As discussed in the response to item b), below, the project's emissions would be below SCAQMD significance thresholds for all criteria pollutants and would thus not jeopardize attainment of the region's $PM_{2.5}$ and ozone goals.

(b) Would the project violate any air quality standard or result in a cumulatively considerable net increase in an existing or projected air quality violation?

The South Coast Air Basin is presently in non-attainment status with respect to state and federal $PM_{2.5}$, PM_{10} and ozone standards.

An air quality screening analysis was performed for the site. The SCAQMD developed Localized Significant Thresholds (LST) to represent the maximum emissions from a project or state ambient air quality standard which are based on the ambient concentrations of that pollutant for each source receptor area.

The mass emissions for LSTs are developed using an air dispersion model. Although the project is greater than 5 acres, this project was compared to LSTs developed for a 5-acre project and would be considered a conservative threshold. In other words the evaluation is based on a smaller project area than proposed using the full emissions profile for the project. When the evaluation is performed this way the result is more protective than required by the LST analysis. The conclusion is the project will not cause emissions reaching or exceeding the SCAQMD LST CEQA thresholds for a 5-acre site with a receptor at 35 meters.

Total On-Site Operation (within SRA17)	CO	NOx	PM_{10}	$PM_{2.5}$
	lbs.	lbs.	lbs.	lbs.
Operation (Onsite)	36.1	7.77	0.63	0.38
Hauling (Total) ^	26.5	17.7	0.43	0.19
Total	62.7	25.4	1.06	0.57
Localized Significance Threshold at 35 m	1,445	177	5.80	2.40
Exceed Significance?	No	No	No	No

^Total hauling emissions are presented as a conservative estimate of on-site hauling emissions.

This project would generate minor volumes of pollutants that would contribute to regional $PM_{2.5}$, PM_{10} and ozone levels, but these project emissions would be well below the level of significance identified by the SCAQMD. As such, this project would generate less than cumulatively considerable emissions of these criteria pollutants.

(c) Would the project expose sensitive receptors to substantial pollutant concentrations?

Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis.

The Oakridge private school is adjacent to the property. The evaluation of emissions and health risk related to the Project indicate that this location is not exposed to significant emissions or health risk.

The Project has been evaluated against the SCAQMD's LSTs for a 5 acre site. LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative and can be used to assist lead

agencies in analyzing localized impacts associated with Project-specific level of Proposed Projects. The SCAQMD Environmental Justice Enhancement Initiative program seeks to ensure that everyone has the right to equal protection from air pollution. The Environmental Justice Program is divided into three categories, with the LST protocol promulgated under Category I: Further-Reduced Health Risk. As shown in Section A above, emissions from the project would not result in significant concentrations of pollutants at nearby sensitive receptors. The fact that the Project emissions would be generated at rates below the LSTs for CO, NOx, PM_{10}, and $PM_{2.5}$ demonstrates that the Project would likely not adversely impact nearby sensitive receptors.

(d) Would the project result in emissions (such as those leading to odors) adversely affecting a substantial number of people ?

The Proposed Project could potentially generate odors resulting from diesel combustion by on-road and off-road vehicles during the construction and operation phases. Odors from project would potentially be significant if they were to become a nuisance pursuant to SCAQMD Rule 402. To become a nuisance, odors resulting from the Project would need to generate multiple valid odor complaints. However, since only Tier 4 Final equipment is used, the project is unlikely to generate emissions that cause odors. Also, since the construction and operation of the Proposed Project requires periodic operation of on-road and off-road vehicles, a continuous condition for odor emission is not anticipated and objectionable odors resulting from the operation are not anticipated.

2.4 Biological Resources

6. BIOLOGICAL RESOURCES: Would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
(b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?		X		
(c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		X		
(d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			X	
(e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			X	
(f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

2.4.1 Project Background

The Proposed Project site is an abandoned pit mine. As such, the site has been highly disturbed in most areas throughout. Native vegetation has regrown in two localized areas including one relatively small upland area and one riparian area at the bottom of the mining pit. Santiago Creek occurs along the north boundary of the site. Habitat for least Bell's vireo occurs within the Proposed Project site and authorization from USFWS for impacts to habitat was obtained through a Low-effect Habitat Conservation Plan (Attachment A). A more detailed characterization of on-site biological resources can be found in the Biological Resources Assessment (Attachment B).

2.4.2 Findings

(a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Impact to special-status plant or wildlife species would be considered a potential substantial adverse effect. A pair of least Bell's vireo (*Vireo bellii pusillus*) (Federal status: Endangered; State status: Endangered) nests within a 2-acre willow (*Salix* spp.) thicket at the bottom of the abandoned mine pit. Two pairs of coastal California gnatcatchers (*Polioptila californica californica*) (Federal status: Threatened; State status: Species of special concern) occur within coastal sage scrub habitat onsite. The project is within the plan area for the Orange County Central and Coastal Subregion Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/Central Coastal HCP). Impacts resulting from the Proposed Project to gnatcatcher have been permitted through the Central Coastal HCP. Impacts to least Bell's vireo from this project are not covered in the Central Coastal HCP. Therefore, the applicant prepared OC Reclamation Low-Effect HCP to address anticipated impacts to vireo. The U.S. Fish & Wildlife Service approved this Low-Effect HCP for impacts to least Bell's vireo and issued Endangered Species Act section 10(a)(1)(B) incidental take permit dated February 6, 2019 (Attachment E). The applicant discussed preparing and submitting a California Endangered Species Act Incidental Take Permit application for potential impacts to least Bell's vireo during numerous conversations and site visits with California Department of Fish & Wildlife in 2016-2019. The Department determined that an incidental take permit would be unnecessary if the applicant could implement avoidance measures which would negate the possibility of take, such as clearing riparian vegetation outside of vireo nesting season (email from CDFW Jennifer Turner to City of Orange Ashley Brodkin dated February 26, 2019 – Attachment F). "*HCPs are designed to conserve and protect federally listed and unlisted species while allowing for changes or alterations to wildlife habitats*." "*They help communities plan for land use activities while protecting habitat and promoting species conservation. Additionally, they help facilitate partnerships and provide solutions needed to achieve long-term biological and regulatory goals. Species benefit through permanent protection and management of their habitat*." (USFWS website reference, https://www.fws.gov/carlsbad/HCPs.html#:~:text=Habitat%20Conservation%20Plan%20(HCP)). California Department of Fish & Wildlife states, "NCCP [Natural Community Conservation Planning] was added to CESA in 1991 (Fish & Game Code Sect. 2800-2840). These provisions provide for voluntary cooperation among CDFW, landowners, and other interested parties to develop natural community conservation plans which provide for early coordination of efforts to protect listed species or species that are not yet listed. The primary purpose of an NCCP is to preserve species and their habitats, while allowing

reasonable and appropriate development to occur on affected lands. NCCPs are grounded in a number of basic principles that frame the outcome of the planning process for future conservation, land use and governance." (CDFW reference website, https://wildlife.ca.gov/Regions/6/Habitat-Conservation-Program#) As such, compliance with these plans and through implementation of Mitigation Measure BIO-1 and Mitigation Measure BIO-2 would reduce the level of impact to least Bell's vireo and California gnatcatcher by preserving and protecting their habitat to less than significant.

- ***Mitigation Measure BIO-1 – Implementation of Conditions Established in Biological Opinion***
  A restoration plan that satisfies the requirements set forth in the Biological Opinion issued by the USFWS, dated February 5th, 2019, will be reviewed and approved by the Service (USFWS) identifying specific locations where restoration will occur, timeline for methodology to implement the proposed restoration, and quantitative performance criteria that will be achieved for the restoration to be determined successful.

- ***Mitigation Measure BIO-2 – Qualified Biological Monitor***
  A designated Project Biologist approved by the Service (USFWS) will monitor construction activities to ensure that all avoidance and minimization measures are properly followed. The Applicant will submit the biologist's name, address, telephone number, and work schedule on the project to the Service prior to initiating project impacts. The Project Biologist will be provided with a copy of the incidental take permit for the Project and will attend all preconstruction meetings, be present during all vegetation clearing activities, monitor construction activities during phase one on a weekly basis, and monitor activities during phase two on a monthly basis.

(b) Have a substantial adverse effect on any riparian habitat or sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Impact to a riparian plant community or other sensitive plant community as defined by California Department of Fish & Wildlife, U. S. Fish & Wildlife Service including Designated Critical Habitat or habitat occupied by a listed species would be considered a substantial adverse effect. Riparian habitat occurs along Santiago Creek within the project boundary and within the mined pit area. Filling of the pit would permanently convert this habitat to a developed condition. Restoration and creation of habitat along Santiago Creek and at an off-site location along Saddle Creek in Orange County is proposed to offset the impact to similar plant communities within the mined pit. On February 6, 2019, U. S. Fish & Wildlife Service issued an Incidental Take Permit and authorized the O. C. Reclamation Low-Effect HCP and Habitat Mitigation and Monitoring Plan, which includes restoration and creation of this habitat type along Santiago Creek

and Saddle Creek for impacts to plant communities within the mined pit, achieving a no net loss of habitat.

Coastal sage scrub is considered a special-status plant community by CDFW. This plant community occurs within the Proposed Project limits, and is occupied by California gnatcatcher. Impacts to this plant community would occur if the Proposed Project were implemented. The project proponent coordinated with USFWS and CDFW during 2016 to 2019 regarding impact to this habitat and contributed to the NCCP/Central Coastal HCP fund in 2019 to mitigate this impact and help in the preservation of this plant community.

In 2016 the project proponent, OC Reclamation, submitted a Lake or Streambed Alteration Notification (Notification No. 1600-2016-0240-R5) with project description, Jurisdictional Delineation, and a check for fees attached. CDFW Kevin Hupf visited the Proposed Project site to review site conditions and confirm information within the prepared Jurisdictional Delineation (Attachment D). Mr. Hupf stated in a letter dated November 18, 2016 (CDFW letter, 2016) in response to the Notification that the Department has determined that your project will not substantially adversely affect an existing fish or wildlife resource within a lake or stream. He further states that the project will not need a Lake or Streambed Alteration Agreement.

In 2018 during joint coordination meetings with USFWS and CDFW, Ms. Jennifer Turner of CDFW requested we resubmit a Lake or Streambed Alteration Notification (Notification No. 1600-2018-0264-R5) for the restoration and enhancement efforts along Santiago Creek. A Notification application with Proposed Project plans, Jurisdictional Delineation, and fees were submitted in fall 2018. Ms. Turner responded with a letter dated October 26, 2018 (CDFW letter, 2018) stating that the Department has determined that the Proposed Project will not substantially adversely affect an existing fish or wildlife resource within a lake or stream. She further states that the project will not need a Lake or Streambed Alteration Agreement.

Mitigation Measure BIO-1 as discussed above will be implemented to reduce impacts to riparian habitat to a less than significant level.

(c) Have a substantial adverse effect on state or federally protected wetlands (including, but no limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling hydrological interruption, or other means?

Impacts to a federal or state jurisdictional wetland would be considered a substantial adverse effect. On June 19, 2020, the U. S. Army Corps of Engineers issued two letters (Attachment G) approving the jurisdictional determination and delineation (Attachment D) prepared for the Proposed Project site and concluded that the mined pit was not within their jurisdiction due to lack of connectivity to a Traditional Navigable Waterway. Therefore, no permit would be required. Although ACOE jurisdiction includes Santiago Creek below Ordinary High Water Mark, this area of jurisdiction would not be impacted by the restoration and creation of habitat along the creek and therefore no impact would occur to ACOE jurisdiction areas.

In October 2016, the project proponent submitted a Lake and Streambed Alteration Agreement Notification to CDFW for impacts to jurisdictional resources on site. California Department of Fish & Wildlife visited the site on at least two occasions (Kevin Hupf November 10, 2016 and Jennifer Turner December 21, 2016) with numerous phone conversations and in-person meetings, including a joint meeting with USFWS on March 14, 2017. CDFW determined and stated in a letter (Attachment H) dated November 18, 2016 impacts from implementing the Proposed Project "will not substantially adversely affect an existing fish or wildlife resource within a lake or stream. As a result, you will not need a Lake or Streambed Alteration Agreement for your project." In another letter from CDFW dated October 26, 2018 Ms. Turner states the same. In effect, the mitigation measure of habitat creation and restoration was determined by CDFW to be adequate compensation for the habitat loss in the mined pit and achieve a no net loss.

In September 2020, the project proponent submitted an application to Santa Ana Regional Water Quality Control Board for Waste Discharge Requirements. The Water Board determined that Waters of the State (wetland) occurred on the project site in the mined pit. A jurisdictional delineation was amended to establish the boundaries of wetlands under the authority of the State Water Board (Attachment D). With the implementation of the habitat creation and restoration plan the Proposed Project would achieve a no net loss of in-kind wetland habitat and reduce the impact to less than significant.

Mitigation Measure BIO-1 as discussed above will be implemented to reduce impacts to state wetlands to a less than significant level.

(d) Interfere substantially with the movement of any resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursey sites?

The Proposed Project site is not located within an NCCP/HCP established reserve or known wildlife corridor and is not within any linkage identified by South Coast

Missing Linkages Report (South Coast Wildlands, 2008). No nursery sites are known to occur within the project limits and none were observed during site investigations.

Santiago Creek is located along the northern boundary of the site and connects open space to the east (Santa Ana Mountains (Cleveland National Forest and Santiago Oaks Regional Park) with open space downstream to the west (Santiago Creek Recharge Basin) then merges with the Santa Ana River which empties into the Pacific Ocean.

Rivers, streams, and creeks are well known to be used by wildlife as daily movement travel routes or migration corridors connecting two larger open spaces. Santiago Creek provides such opportunity for wildlife to move, but with limitations due to steep incised banks, rocky outcrops, and residential development to the north. Larger mammals are not expected to use Santiago Creek within the limits of the Proposed Project for reasons mentioned above, however, smaller urbanized mammal species such as coyote, fox, raccoon, and skunk are expected to use Santiago Creek for movement. Sign of coyote and raccoon were observed during site investigations.

With the implementation of the habitat creation and restoration plan approved by USFWS and CDFW, Santiago Creek would be expanded and provide a wider more suitable wildlife movement pathway. Although initial construction activities could affect wildlife use, this would be short-term, and not substantially interfere with wildlife movement. Construction activities would be limited to daylight hours while wildlife movement typically occurs at night. The long-term affect to wildlife movement and usage of Santiago Creek is considered by USFWS and CDFW to be beneficial.

(e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The County of Orange Municipal Code Chapter 12.32 Tree Preservation regulates tree removal on undeveloped lands where tree is defined as any living plant with a single trunk that is more than 10.5 inches in circumference measured at 24” above ground level, and undeveloped lands is defined as more than one-half acre, or more than six (6) trees.

The Proposed Project site is approximately 15 acres in size with more than six trees having a circumference of 10.5 inches in diameter. Many of these trees would be removed with the implementation of the Proposed Project. As such, a tree removal permit from the City of Orange would be required. The project proponent would comply with all conditions established within the City of Orange tree removal permit such as grading plan submittal with individual tree locations identified, tree removal conditions and tree replacement if deemed necessary by the Director of Community Services.

(f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or State habitat conservation plan?

The Proposed Project is within the plan area for the Natural Community Conservation Plan & Habitat Conservation Plan County of Orange Central and Coastal Subregion (NCCP/HCP). The project proponent has complied with the NCCP/HCP for impacts to California gnatcatcher by paying the Coastal Sage Scrub Mitigation fee as described within the NCCP/HCP. Also, the project proponent prepared a low-effect Habitat Conservation Plan titled, "OC Reclamation Low-Effect HCP" for impacts to least Bell's vireo. The U.S. Fish & Wildlife Service approved the OC Reclamation Low-Effect HCP for impacts to least Bell's vireo and issued Endangered Species Act section 10(a)(1)(B) incidental take permit dated February 6, 2019.

2.5 Cultural Resources

18. CULTURAL RESOURCES: Would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?				X
(b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?		X		
(c) Disturb any human remains, including those interred outside of formal cemeteries?				X
(d) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		

2.5.1 Project Background

The Proposed Project site operated as an open sand and gravel mine for decades prior to operations stopping in the 1960s. Since that time the site has been graded and cleared of vegetation periodically with the most recent clearing occurring in approximately 2008 when the entire bottom of the mining pit was cleared of vegetation and graded. The open pit still exists today and access roads throughout the site continue to be cleared on a regular and frequent basis. No cultural resources have been unearthed or found during any mining activities.

A record search was conducted in 2008 (First Carbon Solutions) at the South Central Coastal Information Center (SCCIC) to identify any historical or archaeological resources or historic properties for the project known as Trails at Santiago Creek which is adjacent to the Proposed Project to the east. Inventories from the National Register of Historic Places (NR), California Register of Historical Resources (CR), California Historical Landmarks (CHL) list, and California Points of Historical Interest (CPHI) were reviewed. The records search included the Proposed Project site within the 1-mile search radius and cultural resources identified are listed in Table 2 below.

Table 2: Cultural Resources Near Proposed Project

Site Name	Type	Distance From Project Site
30-179872	Historic age—A single-family craftsman-style residence built in ca. 1940. This structure was found not significant under CEQA through evaluation by the recorder.	< 1 mile
CA-ORA-1017	Prehistoric age—Artifact scatter consisting of flakes, hammerstones, a chopper, a metate and a core.	< 1 mile

CA-ORA-1018	Prehistoric age—Artifact scatter consisting of manos, metates, a hammerstone and a possible stone ball.	< 1 mile
CA-ORA-1019	Prehistoric age—Artifact scatter consisting of manos, metates, hammerstones, flakes and a core.	< 1 mile
CA-ORA-1020	Prehistoric age—Lithic scatter containing approximately 10 to 15 flakes.	< 1 mile
CA-ORA-1273	Prehistoric age—Artifact scatter and a rock ring. Noted artifacts include mano fragments, metate fragments, cores and flakes. Site was excavated in 1991.	< 1 mile
CA-ORA-1172	Prehistoric age—Artifact scatter consisting of flakes, hammerstones, manos, metate and a "donut stone."	< 1 mile
CA-ORA-369	Prehistoric age—Artifact scatter consisting of cores, shells and flakes.	< 1 mile
CA-ORA-702	Prehistoric age—A scraper, a mano and a chopper found at the surface with indication of subsurface component.	< 1 mile
30-176770/NR-02001725	Historic age—NRHP listed property (Historic Property)—Villa Park School.	< 1 mile
30-160083/NR-83001212	Historic age—NRHP listed property (Historic Property)—Smith and Clark Brothers Ranch.	< 0.25 mile
Source: South Central Coastal Information Center, 2008.		

All cultural resources that were identified in the record search do not occur within the Proposed Project area.

2.5.2 Findings

(b) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

No historical resources have been found or recorded by federal, state, or city registries within the proposed project area. The Proposed Project would have no impact.

(c) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Likelihood of uncovering buried archaeological deposits is low since the Proposed Project area previously operated as a mine and no archaeological resources have been unearthed during mining activities and no sites have been recorded on the Proposed Project site. The closest archaeological resource occurs to the east by approximately 1 mile. Although remote, in the event that buried archaeological deposits could be present and accidental discovery could occur during project construction, a mitigation measure has been included for project implementation and is described below and would reduce any potential

impacts on archaeological resources to a less than significant level.

- ***Mitigation Measure CR-1 –Qualified Archeologist/Paleontologist Monitor***
  During the initial 2-month construction phase involving grading and earthwork activities, a qualified archaeological and paleontological monitor shall be present on-site. In the event of a discovery of an archaeological or paleontological resource, the monitor shall have the discretion to halt all ground disturbing activities within 50 feet of the find until it has been evaluated for significance. If the find is determined to have archaeological or paleontological significance, the qualified monitor shall make recommendations to the Lead Agency on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines. Potentially significant cultural resources consist of but are not limited to stone, faunal bones, fossils, wood, or shell artifacts or features, including hearths, structural remains, or historic dumpsites. Any previously undiscovered resources found during construction within the project area should be recorded on appropriate Department of Parks and Recreation (DPR) forms and evaluated for significance in terms of CEQA criteria.

(d) Disturb any human remains, including those interred outside of formal cemeteries?

Given the lack of archaeological evidence, and the site is an abandoned mining pit, no formal cemeteries are likely to be present in the Proposed Project Area. There would be no impact.

(e) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Based on the history of the Proposed Project area operating as a sand and gravel mine, no paleontological resources are expected to occur. Although remote, in the event that paleontological resources could be present and accidental discovery could occur during project construction, Mitigation Measure CR-1 as described above has been included for project implementation and would reduce any potential impacts on paleontological resources to a less than significant level.

2.6 Energy

3. ENERGY: Would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources, during project construction or operation?				X
(b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				X

2.6.1 Project Background

The Proposed Project will fill an abandoned mine pit. No infrastructure will be built as part of the construction of this project.

2.6.2 Findings

(a) Would the Proposed Project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources, during project construction or operation?

The Proposed Project involves filling an abandoned mine pit and no infrastructure will be constructed. Due to this reason, energy use is limited to vehicles operating on diesel (Tier 4) and there would be no impact.

(b) Would the Proposed Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The Proposed Project does not include the development of buildings or structures that would create or use energy, and therefore the Proposed Project would not conflict with or obstruct state or local plans for renewable energy or energy efficiency. There would be no impact.

2.7 Geology and Soils

1. GEOLOGY AND SOILS: Would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
(i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X	
(ii) Strong seismic ground shaking?			X	
(iii) Seismic-related ground failure, including liquefaction?			X	
(iv) Landslides?				X
(b) Result in substantial soil erosion or the loss of topsoil?			X	
(c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?				X
(d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code of 1994, creating substantial direct or indirect risks to life or property?				X
(e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X

2.7.1 Project Background

Geomorphic Settings

Regionally, the site is situated in the northeastern portion of the Peninsular Ranges Geomorphic Province at an average elevation of 400± feet m.s.l. (mean sea level) and subjacent to the Santa Ana Mountains, which rise to the east to more than 3,000 feet m.s.l., Santiago Creek, which bounds the north and the Santa Ana River, situated a few miles north, is currently active in transporting sediments and forming coalescing alluvial fans resulting in a broad surface which slopes away from the hills toward the Pacific Ocean to the southwest.

The majority of the site lies within the historic Santiago Creek floodplain designated as older alluvium terrace deposits (Qt). This terrace, identified "Qt" is traceable as a paired surface upstream and downstream from the site. Regional mapping (Schoellhamer et al., 1981) shows that remnants of at least four fluvial terraces border Santiago Creek in this area. These terraces are all underlain by fluvial gravels laid down by ancestral channels of Santiago Creek and bear lithologies and clast sizes comparable to the gravels that underlay the subject site and which are exposed in present floodplain quarries downstream and on-site.

No active or potentially active faults have been identified on the subject site and none were found during field mapping.

2.7.2 Findings

(a) (i) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated in the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

The closest active "regional" fault is the Whittier Fault, located approximately 6 (six) miles (9 km.) northeast of the subject site. The Whittier Fault, considered a "master" fault of the area (Yeats et al., 1981) and also a northern extension of the Elsinore Fault, is a high-angle northeast-dipping strike-slip fault with a reverse component of Late Pleistocene to Holocene Age (Yerkes et al., 1965) The Whittier Narrows earthquake (Mw5.9) of October 1, 1987 occurred approximately 6 miles northwest of the site, which was only related to the Whittier Fault and which involved an east-striking blind thrust dipping 25º north (Hauksson & Jones, 1989). In general, recorded seismic activity from 1932 ± to present for the subject site and its environs has been relatively sparse (Bryant and Fife, 2009).

The project site is not located within an Alquist-Priolo earthquake fault zone. No known faults traverse the project site or are located adjacent to the project site that may rupture during seismic activity. A less than significant impact would occur.

(a) (ii) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

Just like most of southern California, in the event of an earthquake strong ground shaking is expected to occur on the project site. The Proposed Project does not propose the construction of habitable structures and therefore would not expose people or structures to strong seismic ground shaking greater than

what currently exists. Impacts would be less than significant.

(a) (iii) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

The site, in general, consists of alluvial terrace deposit remnants and bedrock of the El Modeno Volcanics. Both these deposits are well consolidated and suitable for the support of engineered fills.

Liquefaction is a phenomenon which tends to occur in saturated cohesionless soils during relatively severe earthquake ground motions. In general, during ground motion, saturated sands tend to compact and decrease in volume and if drainage is unable to occur, an increase in pore water pressure may result. If the pore water pressure becomes equivalent to the overburden pressure, the effective stress becomes zero and consequently, the soil loses its strength and is considered to be in a liquefied state. Post-liquefaction effects at a site can manifest in several ways and may include ground deformations, loss of shear strength, lateral spread, dynamic settlement and flow failure.

The El Modeno Volcanic (Tmet) and Alluvial Terrace Deposits (Qt) that underlie the site, are not considered susceptible to liquefaction. Artificial Fill (Af) and recent alluvium (Qal) are potentially liquefiable, if saturated.

Considering the recommended removal and replacement of those materials within the proposed development with engineered fills, the susceptibility to liquefaction will be negligible upon completion of grading.

(a) (iv) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

Slope failures or landslides typically occur as either shallow surficial (surface) slides/slumps, mudslides/debris flows, deep-seated landslides, or topples/falls. Surficial slides or slumps typically include failure of the upper 1 to 15 feet of surficial soils and upper weathered bedrock. These failures occur as a result of excessive precipitation on moderately steep to steep hillsides, earthquakes, and/or undercutting of the toe of slope, such as by excavation of a new road or any other linear excavation that is perpendicular to the slope.

This project will stabilize the existing slopes eventually removing them all together. During the fill process, slopes will be benched, stabilized and flow directed onsite. As a result, it is not considered at risk for a landslide.

(b) Would the project result in substantial soil erosion or the loss of topsoil?

Soil erosion and loss of topsoil could occur with the implementation of the Proposed Project due to the disturbed surface while placing the engineered fill. If the amount of soil loss is substantial, this could be considered a significant impact. To reduce the level of soil erosion, Best Management Practices, such as installing silt fencing and straw wattles, will be implemented during the construction phase. Also, topsoil within the mined pit and on the berm adjacent to Santiago Creek would be temporarily stock-piled and used as topsoil in the habitat creation and restoration areas. With the implementation of these measures, the loss of topsoil would be minimized to a less than substantial level.

(c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Refer to response 2.7.2(b) above.

(d) Would the project be located on expansive soils, as defined in Table 18-1- B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

In general, the site sub-grade soils vary from granular gravelly silty sand with very low soil expansion potential to sandy silty clay with medium expansion potential. Therefore, there is no significant impact.

(e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternate wastewater disposal systems where sewers are not available for the disposal of wastewater?

No facilities that would require a septic system are part of the Project design. No impacts would occur.

2.8 Greenhouse Gas Emissions

4. GREENHOUSE GAS EMISSIONS: Would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Generate greenhouse gas emission, either directly or indirectly, that may have a significant impact on the environment, based on any applicable threshold of significance?			X	
(b) Conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

2.8.1 Project Background

Greenhouse Gas (GHG) emissions are released as byproducts of fossil fuel combustion, waste disposal, energy use, land use changes, and other human activities. This release of gases, such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and chlorofluorocarbons, creates a blanket around the earth that allows light to pass through but traps heat at the surface, preventing its escape into space. While this is a naturally occurring process known as the greenhouse effect, human activities have accelerated the generation of GHGs beyond natural levels. The overabundance of GHGs in the atmosphere has led to an unexpected warming of the earth and has the potential to severely impact the earth's climate system.

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. CH_4 traps over 25 times more heat per molecule than CO_2, and N_2O absorbs 298 times more heat per molecule than CO_2. Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO_2e). Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

The local air quality agency regulating the South Coast Air Basin (SoCAB) is the SCAQMD, the regional air pollution control officer for the basin. To provide guidance to local lead agencies on determining significance for GHG emissions in CEQA documents, SCAQMD staff is convening an ongoing GHG CEQA Significance Threshold Working Group. Members of the working group include government agencies implementing CEQA and representatives from various stakeholder groups that provide input to SCAQMD staff on developing the significance thresholds. On October 8, 2008, the SCAQMD released the Draft AQMD Staff CEQA GHG Significance Thresholds.

On September 28, 2010, SCAQMD Working Group Meeting #15 provided further guidance, including an interim screening level numeric threshold of 3,000 metric tons of CO_2e annually and an efficiency-based threshold of 4.8 metric tons of CO_2e per service population (defined as the people that work, study, live, patronize and/or congregate on the Project site) per year in 2020 and 3.0 metric tons of CO_2e per service population per year in 2035. The SCAQMD has not announced when staff is expecting to present a finalized version of these thresholds to the governing board. As discussed below, the project was evaluated against the 3,000 metric tons of CO_2e annual threshold.

GHG sources associated with the project include on-road trucks bringing fill material to the site and off-road equipment used to process the fill material, including placement and compaction. A total of 60 daily truck trips (round trip) and 14,400 annual truck trips (based on 240 operating days per year) were analyzed for GHG emissions. Off-road GHG emissions were analyzed based on an estimated consumption of 25,000 gallons of diesel fuel per year. The combined on-road and off-road GHG emissions are then compared to SCAQMD's threshold of 3,000 metric tons of CO_2e annually.

2.8.2 Findings

(a) Would the project generate greenhouse gas emission, either directly or indirectly, that may have a significant impact on the environment?

On-road emissions were calculated using the California Air Resources Board's EMFAC2021 (v1.0.1) emission rates. Off-road emissions were calculated using USEPA Greenhouse Gas Reporting Rule (40 CFR Part 98) emission factors. The results of the analysis are:

On-Road Emissions:	730.2 metric tons CO_2e per year
Off-Road Emissions:	282.0 metric tons of CO_2e per year
Total GHG Emissions:	1,012.2 metric tons of CO_2e per year

Additional detail regarding these calculations is presented in Attachment I.

Because the annual anticipated GHG emissions of 1,012.2 metric tons of CO_2e per year are less than the SCAQMD significance threshold of 3,000 metric tons of CO_2e per year, the project impacts would be less than significant.

(b) Would the project conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Orange County and the City of Orange do not have specific thresholds of significance related to GHGs. Because the project's GHG emissions are less than the established SCAQMD threshold for determination of significance, the

project will not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Therefore, impacts from greenhouse gas emissions are considered less than significant.

2.9 Hazard and Hazardous Materials

11. HAZARDS AND HAZARDOUS MATERIALS: Would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
(b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
(c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
(d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
(e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?				X
(f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
(g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X

2.9.1 Project Background

The site may have storage of routine hazardous materials or hazardous waste, such as vehicle oils and other fluids, necessary for the operation and minor maintenance of equipment. The Site will prepare a Hazardous Materials Business Plan and Inventory and submit it to the Orange County Health Care Agency, Environmental Health Agency under the CUPA program in accordance with the California Health and Safety Code, Division 20, Chapter 6.95, §25500-25519 and California Code of Regulations, Title 19, Division 2, Chapter 4 . If the site generates hazardous waste, it would be limited to waste oil and oily absorbents. The site would apply for an EPA Identification number.

The facility will comply with all applicable design codes and regulations, National Fire Protection Standards, industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection and will not store chemicals in concentration equal to or greater than the Emergency Response Planning Guideline 2 levels.

The facility will prepare a Waste Load Checking Program to prevent the acceptance, deposition or disposal of hazardous wastes, or any other prohibited, unauthorized, or unapproved waste or materials at the facility. In addition, the facility will prepare a Waste Acceptance Plan which details the type of inert material allowed to be used in the fill, material sampling frequencies and acceptance criteria.

2.9.2 Findings

(a) (b) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials and would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Proposed Project operation and maintenance activities would involve the continuation of routine transport, use, or disposal of hazardous materials and substances, such as fuels and lubricants for vehicles and equipment.

Routine maintenance of facilities and vehicles, and adherence with standard best management practices (BMPs) would minimize the risk of exposure to hazardous materials during operation and maintenance of the Proposed Project. BMPs include secondary containment, spill clean-up, proper disposal of hazardous waste and limiting vehicle maintenance to paved areas. Additionally, the implementation of monitoring and management plans would minimize exposure of hazardous materials to the environment. The monitoring plans and management plans include the Hazardous Materials Business Plan and Storm Water Pollution Prevention Plan which require monthly site inspections and spill reporting.

With the application of standard BMPs and the implementation of monitoring, control, and management plans, the Proposed Project would have a less than significant impact to the public and environment from routine transport, use, or disposal of hazardous materials.

Ongoing maintenance and operation of the Project requires diesel powered equipment. With equipment use there is always a risk of unforeseen circumstances and accidents resulting from a release of hazardous materials such as gas, diesel, or oil. This potential accidental release would be minimized through implementation of standard BMPs for management of stormwater and containment of hazardous materials.

With the implementation of BMPs, risks involving the release of hazardous materials into the environmental under reasonably foreseeable upset and/or accident conditions would be less than significant.

The facility will implement the Waste Load Checking Program to prevent the acceptance of any hazardous or unacceptable material in the fill operation.

(c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

There is an existing school within one quarter mile of the Proposed Project. The Oakridge private school is adjacent to the property. The Proposed Project would not generate hazardous emissions and would not involve handling of acutely hazardous materials, substances or wastes. Regular handling of minor quantities of fuels and lubricants would occur; however, as discussed in the response to item a), that would not result in a significant threat to the environment. This project would not affect the nearest schools with hazardous substances or wastes. No impact would occur.

(d) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The subject Site is not identified in the California Department of Toxic Substances Control's "Envirostor" database of government agency-monitored sites reported to contain hazardous materials and wastes that undergoing remediation activities, were previously listed as a site of concern, or which require clean up under state and federal laws. No impact would occur.

(e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

The Site is not located within an area governed by an airport land use plan, and is not within two miles of a public airport. No impact would occur.

(f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The Site has not functioned as and is not designated as a place for any emergency response operations. The relatively small-scale project would not alter the alignment, capacity or function of any existing streets or highways and would not adversely affect the use of Cannon Street, E. Santiago Canyon Road, N. Santiago Blvd., or any other nearby routes that may be used for emergency evacuation. No impact would occur.

(g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The Proposed Project is not located on land designated as a state or local fire hazard severity zone (CAL FIRE 2021). The site will manage brush within its boundaries to reduce impacts from wildfire. No impact would occur.

2.10 Hydrology and Water Quality

5. HYDROLOGY AND WATER QUALITY: Would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			X	
(b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?				X
(c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:				
(i) result in substantial erosion or siltation on- or off-site?;			X	
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;				X
(iii) create or contribute runoff water that would exceed the capacity of existing or planned stormwater discharge systems or provide substantial additional sources of polluted runoff; or				X
(iv) impede or redirect flood flows?				X
(d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				X
(e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?				X

2.10.1 Project Background

The only water anticipated for use at the site is for dust suppression. The facility anticipates using approximately 20,000 gallons per day. Water is supplied to the facility by the City of Orange.

2.10.2 Findings

(a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

The facility has applied for Waste Discharge Requirements for the operation and will comply with all requirements to protect water quality. The facility has received coverage under the NPDES Industrial Storm Water General Permit. Water quality impacts would be avoided or reduced to a level below significance through implementation of standard BMPs. BMPs will be specific to the active phase of the project but will at a minimum include: track-out control, perimeter control, secondary containment, response, material building and waste management, wind erosion control, and employee training. Impacts would be less than significant.

(b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

The Proposed Project includes no activities that would extract groundwater from wells that could deplete groundwater supplies or create significant changes to groundwater recharge. Therefore, the Proposed Project does not decrease groundwater supplies or interfere with groundwater recharge.

The Proposed Project would not affect groundwater supply or recharge, and as a result does not impede sustainable groundwater management of the basin. No impact would occur.

(c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:

(i) result in substantial erosion or siltation on- or off-site;

The Proposed Project consists of importing material to reclaim a former mining pit. These activities have the potential to result in erosion or siltation on- or off-site. Impacts would be less than significant with the implementation of standard BMPs described in Section 2.10.2(a). Once the project is complete the site will include wetland basins at the slope area and open space.

(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off- site;

The final site condition will consist of wetland basins and open space. KWC Engineers prepared a Hydrology/Hydraulics Report found in Attachment J. This hydrology and hydraulics report has evaluated the potential effects of runoff for the Proposed Project Santiago Creek Pit phase 2. In addition, the report has addressed the methodology used to analyze the proposed conditions, which was based on the Orange County Hydrology Manual. This section provides a summary discussion that evaluates the potential effects of the Proposed Project.

- The proposed drainage pattern is consistent with existing drainage pattern.
- Storm drain alignments and pipe sizes were adequately sized from the hydrology results and hydraulic calculations of the hydraulic grade line (HGL) for the 100-year storm event.
- The proposed onsite storm drains shall be privately maintained.
- Proposed alignment and pipe sizes of storm drain lines were presented.
- Proposed hydraulic grade lines and design discharges throughout the storm drain system are presented.

All storm water run-off will be conveyed via existing and onsite storm drain systems. The proposed stormwater facilities are designed for the 100-year storm event. Impacts are considered less than significant.

(iii) create or contribute runoff water that would exceed the capacity of existing or planned stormwater discharge systems or provide substantial additional sources of polluted runoff; or

The Proposed Project area is not connected to an existing public or private stormwater system. The Proposed Project does include new drainage for site runoff. Run-off related to the site would not produce additional source of pollution. In addition, implementation of BMPs, would minimize sources of polluted run-off. There would be no impact.

(iv) impede or redirect flood flows?

KWC Engineers was contracted by OC Reclamation, LLC, to prepare a Conditional Letter of Map Revision (CLOMR) for a 14.8-acre project site located in the City of Orange, California. The project is located along the south side of Santiago Creek, just west of the Cannon Street Bridge (see Figure 3).

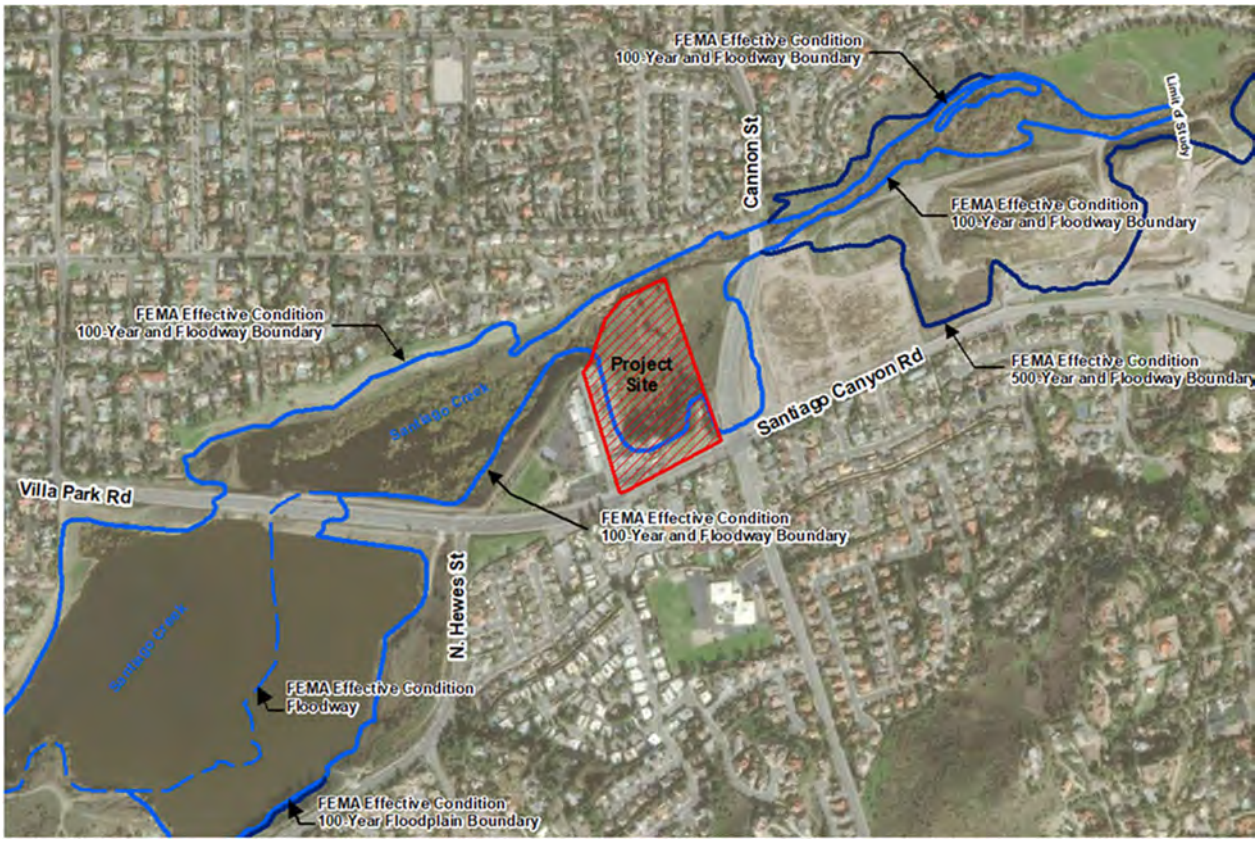

Figure 3: Santiago Creek at Proposed Location

As shown in Figure 3, the site is located within the 100-year floodplain and regulatory floodway. The floodway was allowed to be revised on the basis of updated hydrology. The effective condition 100- year floodplain and floodway was based on the US Army Corps of Engineers (COE) estimated 100-year discharge of 12,000 cfs maximum release from Villa Park Dam. The COE at the request of City of Orange, prepared the Santiago Creek Hydrologic Study of Existing Conditions for Flood Insurance Purpose, dated June 1990. The purpose of the study was to determine the 100-year peak discharges under existing conditions on Santiago Creek in the City of Orange. August 14, 1995 County of Orange Memo documented the COE 1990 study as very close to their expected value discharges using 1989 calibration data. As a result, Orange County decided to adopt the updated COE design discharges. The 100-year discharge was revised from 12,000 cfs to 6,000 cfs and this was the reason that the regulatory floodway was allowed to be revised.

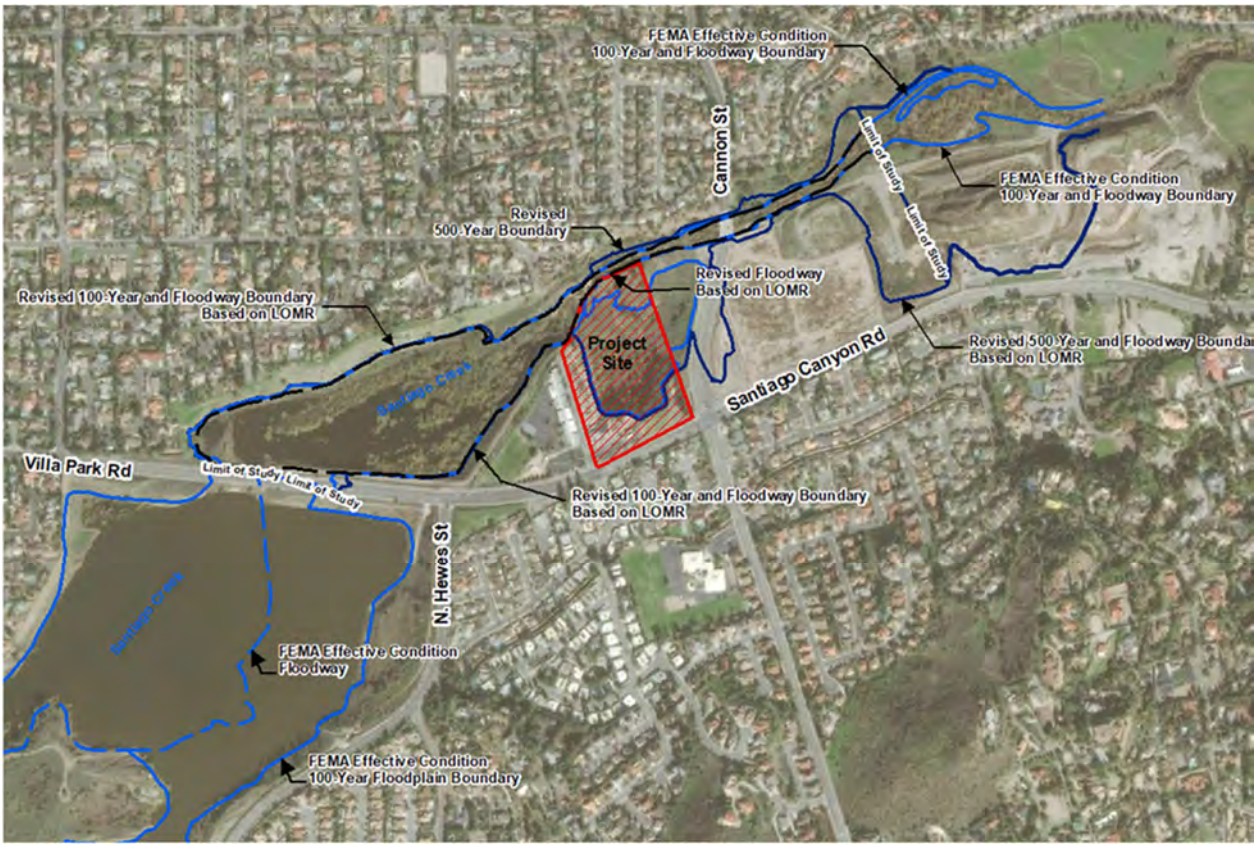

Figure 4: Revised Floodplain Based on LOMR At Proposed Project Site Location

The floodplain hydraulic model was updated using the revised 100-year discharge and updated site topography. Figure 4 shows the revised 100-year floodplain and floodway, and 500-year floodplain boundaries. FEMA accepted the LOMR study and issued a Letter of Map Revision Document to revise Flood Insurance Rate Map (FIRM) 06059C0158J and 06059C0166J, Floodway Data Tables and Flood Profiles to reflect the LOMR effective February 22, 2012.
As shown in Figure 4, the project site is now outside of the regulatory floodway. Development is allowed with the 100-year floodplain but needs to be elevated above the Base Flood Elevation (BFE).

The LOMR model was used to evaluate the Proposed Project Condition by removing the flow conveyance block by the proposed site grading along the southern floodplain boundary. Site grading was adjusted by raising the finish grades at least one foot above the BFEs. A Conditional Letter of Map Revision study was prepared based on raising the site above the 100-year floodplain elevations as determined by the revised LOMR model. FEMA accepted the CLOMR study and issued a Conditional Letter of Map Revision Document dated March 17, 2021 and determined that the Proposed Project meets the minimum floodplain management criteria of the National Flood Insurance Program (NFIP).

(d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

The Proposed Project area is not in a flood hazard, tsunami, or seiche zone. Therefore, there would be no impact.

(e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

There is no sustainable groundwater management plan or water quality control plan applicable to the Proposed Project area. The project falls withing the Orange County Drainage Area Management Plan and City of Orange Local Implementation Plan. Existing and potential beneficial uses that apply to surface waters within the Watershed are identified in the Basin Plan. The receiving water for the project is the Santiago Creek, Santa Ana River (Reach 2). The beneficial uses identified for these receiving waters are municipal and domestic water supply, agricultural supply, groundwater recharge, water contact recreation, non-contact water recreation, warm freshwater habitat and wildlife habitat. The facility will implement site specific Waste Discharge Requirements and the Storm Water Pollution Prevention Plan. This will require sampling site run-off to ensure protection of water quality standards.

2.11 Land Use and Planning

9. LAND USE AND PLANNING: Would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Physically divide an established community?				X
(b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?				X

2.11.1 Project Background

The Proposed Project site operated as an open sand and gravel mine for decades prior to operations stopping in the 1960s. Since that time the site has been graded and cleared of vegetation periodically with the most recent clearing occurring in approximately 2008 when the entire bottom of the mining pit was cleared of vegetation and graded. The open pit still exists today and access roads throughout the site continue to be cleared on a regular and frequent basis.

2.11.2 Findings

(a) Would the project physically divide an established community?

The Proposed Project would not result in physical barriers that would divide an established community. There would be no impact.

(b) Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

The Proposed Project is consistent with the Orange County General Plan. No additional studies or mitigation would be required because the Proposed Project does not include development and there would be no impact.

2.12 Mineral Resources

10. MINERAL RESOURCES. Would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?				X
(b) Result in the loss of availability of a locally-imported mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?				X

2.12.1 Project Background

The City of Orange General Plan (Plan) currently designates zoning of the Proposed Project site as Sand & Gravel. Policy 4.5, Natural Resources Section of the Plan states: Protect the Santiago Creek and Santa Ana River corridors from premature urbanization to ensure the continued availability of important sand and gravel, flood control, water recharge, biological, and open space resources.

Page NR-32 of the Plan also states: “Mineral resource deposits in Orange are primarily limited to the sand and gravel resources contained in and along the Santa Ana River and Santiago Creek. Sand and gravel resources are referred to collectively as “aggregate.” Aggregate is the primary component of Portland cement concrete, a material widely used in the construction industry. The state requires general plan land use policy to recognize the importance of these deposits to the region’s economy. As these resource deposits are important to the region’s economy, the City will evaluate development proposals within these areas, and ensure adequate mitigation or preservation of the areas for future aggregate mining activity.

The Land Use Element provides a means to protect the aggregate resource areas from premature urbanization. Historically, Orange contributed to the gravel industry, but the City’s mineral resources have been mostly exhausted. Over the years, Orange has been characterized by numerous state-designated Mineral Resource Zones (MRZs), which identify the locations of regionally significant aggregate deposits. The MRZs have since been declassified, either as a result of completed mining activity, or as a result of urban development.

However, the Land Use Policy Map (in the Land Use Element) designates an area comprising and surrounding the two ground-water recharge pits (Bond Pits) on Santiago Canyon Road within the northeastern portion of the City as a Resource Area for the purpose of conserving mineral resources and allowing mining activities. Additionally, the approximately 18-acre site of the R.J. Noble Company, which lies within the northwestern unincorporated portion of the planning area, is another Resource Area currently used for aggregate extraction and crushing operations.

Portions of Irvine Lake in East Orange that are currently designated as Open Space may be used in the future for desilting activities, with the possibility of aggregate extraction.

The Resource Area land use designation allows for only aggregate extraction or recreation uses. Although the Open Space designation does not permit mining, it will protect areas from urbanization, making it possible to mine the areas at some future date if necessary. Areas containing mineral resources protected in this manner include the resource zones at the west end of Lincoln Avenue, areas adjacent to Santiago Creek, and the north, east, and west sides of Irvine Lake in East Orange. The mineral resource areas in East Orange would also require amendment to the NCCP before extraction could occur."

2.12.2 Findings

(a) Would the project result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?

The Proposed Project site is an abandoned open pit mine with relatively steep slopes. The mine was abandoned in the 1960's and the Plan states that much of the aggregate within this area is mostly depleted. As such, it is presumed the aggregate on site available for mining has been depleted. Therefore, there would be no loss of available mineral resource with the implementation of the Proposed Project and no impact.

(b) Would the project result in the loss of availability of a locally-imported mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

The Proposed Project site is within a known mineral extraction area of the city and county. As previously stated, the Proposed Project site is an abandoned open pit mine with relatively steep slopes. The mine was abandoned in the 1960's and the Plan states that much of the aggregate within this area is mostly depleted. As such, it is presumed the aggregate on site available for mining has been depleted. Therefore, the site should not be considered a mineral resource recovery site and no impact would occur with the implementation of the Proposed Project.

2.13 Noise

8. NOISE: Would the project result in:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
(b) Generation of excessive groundborne vibration or groundborne noise levels?				X

2.13.1 Project Background

The Proposed Project would be implemented in two phases over 4.5 years. The first phase would include initial ground clearing, excavating the pit, creating an access road, and re-contouring the berm and southern bank of Santiago Creek. The second phase would occur over the remainder of the 4.5 years and would include filling the pit with inert material and compacting.

2.13.2 Findings

(a) Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

The City of Orange General Plan address impacts related to noise. In the Noise Element of the General Plan Goal 7.0 states "Minimize construction, maintenance vehicle, and nuisance noise in residential areas and near noise sensitive land uses." Policies were developed to help achieve this goal and the relevant policies are:

Policy 7.2 Require developers and contractors to employ noise minimizing techniques during construction and maintenance operations.

Policy 7.3 Limit the hours of construction and maintenance operations located adjacent to noise sensitive land uses.

Policy 7.4 Encourage limitations on the hours of operations and deliveries for commercial, mixed-use, and industrial uses abutting residential zones.

The Noise Element of the General Plan presents Maximum Allowable Noise

Exposure in the following tables:

Table N-3
Maximum Allowable Noise Exposure—Transportation Sources

Land Use		CNEL (dBA)	
Designations (as shown on Figure LU-5)	Uses	Interior[1,3]	Exterior[2]
Estate Low Density Residential Low Density Residential Low Medium Density Residential	Single-family, duplex, and multiple-family	45	65
	Mobile home park	N/A	65
Medium Density Residential Neighborhood Mixed-use Neighborhood Office Professional Old Towne Mixed-use General Commercial Yorba Commercial Overlay Urban Mixed-use Urban Office Professional	Single-family	45	65
	Mobile home park	N/A	65
	Multiple-family, mixed-use	45	65[4,5]
	Transient lodging—motels, hotels	45	65
	Sports arenas, outdoor spectator sports	N/A	N/A
	Auditoriums, concert halls, amphitheaters	45	N/A
	Office buildings, business, commercial and professional	50	N/A
Light Industrial Industrial	Manufacturing, utilities, agriculture	N/A	N/A
Public Facilities and Institutions	Schools, nursing homes, day care facilities, hospitals, convalescent facilities, dormitories	45	65
	Government Facilities—offices, fire stations, community buildings	45	N/A
	Places of Worship, Churches	45	N/A
	Libraries	45	N/A
	Utilities	N/A	N/A
	Cemeteries	N/A	N/A
Recreation Commercial Open Space Open Space—Park Open Space—Ridgeline Resource Area	Playgrounds, neighborhood parks	N/A	70
	Golf courses, riding stables, water recreation, cemeteries	N/A	N/A

Notes:
(1) Interior habitable environment excludes bathrooms, closets and corridors.
(2) Exterior noise level standard to be applied at outdoor activity areas; such as private yards, private patio or balcony of a multi-family residence. Where the location of an outdoor activity area is unknown or not applicable, the noise standard shall be applied inside the property line of the receiving land use.
(3) Interior noise standards shall be satisfied with windows in the closed position. Mechanical ventilation shall be provided per Uniform Building Code (UBC) requirements.
(4) Within the Urban Mixed-Use, Neighborhood Mixed-Use, Old Towne Mixed-use, and Medium Density Residential land use designations, exterior space standards apply only to common outdoor recreational areas.
(5) Within Urban Mixed-Use and Medium Density Residential land use designations, exterior noise levels on private patios or balconies located within 250 feet of freeways (I-5, SR-57, SR-55, SR-22, or SR-241) and Smart Streets and Principal Arterials identified in the Circulation & Mobility Element that exceed 70 dB should provide additional common open space.
N/A=Not Applicable to specified land use category or designation
Source: Alliance Acoustical Consultants, modified by EDAW, 2008

Table N-4
Maximum Allowable Noise Exposure—Stationary Noise Sources

Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly Equivalent Level (L_{eq}), dBA	55	45
Maximum Level (L_{max}), dBA	70	65

Notes:
(1) These standards apply to new or existing noise sensitive land uses affected by new or existing non-transportation noise sources, as determined at the outdoor activity area of the receiving land use. However, these noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).
(2) Each of the noise levels specified above should be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. Such noises are generally considered by residents to be particularly annoying and are a primary source of noise complaints. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g. caretaker dwellings).
(3) No standards have been included for interior noise levels. Standard construction practices that comply with the exterior noise levels identified in this table generally result in acceptable interior noise levels.
(4) The City may impose noise level standards which are more or less restrictive than those specified above based upon determination of existing low or high ambient noise levels. If the existing ambient noise level exceeds the standards listed in Table N-4, then the noise level standards shall be increased at 3 dB increments to encompass the ambient environment. Noise level standards incorporating adjustments for existing ambient noise levels shall not exceed a maximum of 70 dB Leq.

City of Orange Municipal Code Chapter 8.24 Noise Control regulates unnecessary, excessive, and annoying sounds emanating from the City. It is the intent of this chapter of the Municipal Code to protect residential land uses from these sounds. Subsection 8.24.040 Exterior Standards presents the table below with exterior noise standards.

Table 8.24.040 Exterior Noise Standards

EXPAND

	Noise Level	Time Period
Hourly Average (L_{eq})	55 dB (A)	7:00 a.m.—10:00 p.m.
	50 dB (A)	10:00 p.m.—7:00 a.m.
Maximum Level	70 dB (A)	7:00 a.m.—10:00 p.m.
	65 dB (A)	10:00 p.m.—7:00 a.m.

Equipment to be used during both phases of construction and estimated noise levels at source point are presented below:

Excavator ~ 100 dB
Dozer ~ 110 dB
Loader ~ 100db
Backhoe ~ 90 dB
Landscraper ~ 120 dB
10-wheel truck ~ 80 dB

A berm will be created along the northern and eastern boundary as part of the first phase of the project. The berm will be planted with native vegetation and will help to reduce noise levels during construction and facility operation. Noise level would further attenuate over distance from the source.

Existing noise levels would be established prior to initial construction and monitored during construction and periodically during facility operation to help ensure maximum noise levels aren't exceeded at the receptor sites such as Oakridge Private School and the residential area to the north. As such, implementation of the Proposed Project is not expected to result in generation of substantial temporary or permanent increase in ambient noise levels.

(b) Would the project result in a generation of excessive groundborne vibration or groundborne noise levels?

The Proposed Project would not require the use of groundborne vibrating or groundborne noise generating equipment such as a pile-driver or other similar activities. Therefore, no impact due to groundborne vibration or groundborne noise generating activities is expected with the implementation of the Proposed Project.

2.14 Population and Housing

13. POPULATION AND HOUSING: Would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No Impact
(a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
(b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X

2.14.1 Project Background

The Proposed Project will fill an abandoned pit mine but will not include any form of development and therefore will not result in the removal or displacement of any existing housing.

2.14.2 Findings

(a) Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No development is proposed as part of the Proposed Project, therefore no impact would occur.

(b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

There are no structures or people on the Proposed Project site that would be displaced as it is an abandoned mine pit. No further development is proposed as part of this project. No housing development or business development is proposed as part of this project and no infrastructure development, such as roads or other public transportation, is proposed. There will be no impact.

2.15 Public Services

15. PUBLIC SERVICES:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				X
Fire protection?				X
Police protection?				X
Schools?				X
Parks?				X
Other public facilities?				X

2.15.1 Project Background

Public services including fire protection, police protection, schools, and parks occur nearby the Proposed Project location. Details are discussed below in 2.15.2(a) Findings.

2.15.2 Findings

(a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services.

Fire protection services in Orange County are provided by the Orange County Fire Authority. The closest station is approximately 600 feet from the Proposed Project site at OCFA Station #23 located at 5020 E Santiago Canyon Road, Orange, CA 92869. The Proposed Project would not require additional demand for fire protection services and there would be no impact.

Police protection services in the City of Orange are managed by the Orange

Police Department and its nearest station is approximately 3.6 miles to the west from the Proposed Project site, located at 1107 North Batavia Street, Orange, CA 92687. The Proposed Project would not require additional demand for police protection services and there would be no impact.

The nearest school is Oakridge Private School which is adjacent to the Proposed Project site located to the west of North Santiago Boulevard. This school is for Pre-K-8 grade students. Linda Vista Elementary school is located nearby to the south by approximately 900 feet and is a K-5 school. The Proposed Project would not physically alter these schools nearby; therefore, there would be no impact.

The closest park to the Proposed Project is Santiago Oaks Regional Park which is a 1,269 acre (OC Parks) multi-use park managed by OC Parks and is approximately 1.3 miles to the north east. The Proposed Project would not physically alter this park; therefore, there would be no impact.

2.16 Recreation

20. RECREATION:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
(b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

2.16.1 Project Background

The closest park to the Proposed Project is Santiago Oaks Regional Park which is a 1,269 acre (OC Parks) multi-use park managed by OC Parks and is approximately 1.3 miles to the north east. A bike path runs along Cannon Street and E. Santiago Canyon Road. The Proposed Project will not impact the bike path. Access to the site is on N. Santiago Canyon Road.

2.16.2 Findings

(a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

The Proposed Project would not result in additional development; therefore, no additional use of nearby regional parks or recreational facilities would occur. There would be no impact.

(b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

The Proposed Project does not include the construction or expansion of recreational facilities and is within an area zoned as Sand & Gravel. There would be no impact.

2.17 Transportation

14. TRANSPORTATION: Would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Conflict with a plan, ordinance or policy addressing the performance of the circulation system, including transit, roadways, bicycle lanes and pedestrian paths?			X	
(b) For a land use project, would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)(1)?			X	
(c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			X	
(d) Result in inadequate emergency access?				X

2.17.1 Project Background

The Proposed Project could increase daily traffic by up to 60 trucks a day.

2.17.2 Findings

(a) Would the project conflict with a plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle lanes and pedestrian paths?

The Proposed Project could increase daily traffic by up to 60 truck trips per day. The City of Orange has developed a “Circulation and Mobility Element” designed to address CEQA traffic related evaluations. Santiago Canyon Road is currently a 4-lane divided highway with is categorized as a “Primary” street type in the Circulation and Mobility Element. Primary street types have a designated capacity of 33,750 vehicle trips per day. Based on 60 truck trips per day, the project will contribute slightly less than 0.18% of the designated capacity of Santiago Canyon Road.

Figure CM-2 (City Master Plan of Streets and Highways) in the Circulation and Mobility Element identifies Santiago Canyon Road as a “Major Arterial” street type. Major Arterial street types have a designated capacity of 50,700 vehicle trips per day. Based on 60 truck trips per day, the project will contribute slightly less than 0.12% of the designated capacity of Santiago Canyon Road.

As a result, traffic generated during the Proposed Project would not conflict with the City of Orange's Circulation Element and impacts would be less than significant.

(b) For a land use project, would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)(1)?

CEQA analysis of transportation impacts is based on the amount and distance that a project might cause people to drive, measured by automobile trips generated and trip distance (e.g., vehicle miles traveled [VMT]). As stated in CEQA Guidelines section 15064.3, except as provided in subdivision (b)(2) (regarding roadway capacity), a project's effect on automobile delay shall not constitute a significant environmental impact. Automobile delay, as gauged by level of service or similar measures of capacity or traffic congestion, is therefore not considered a significant impact on the environment.

CEQA Guidelines 15064.3(a) clarifies that the primary consideration in evaluating a projects transportation impacts for CEQA purposes is the amount and distance that a project might cause people to drive. This captures two measures of transportation impacts: number of automobile trips generated and VMT. The Proposed Project would result in an increase in 8 (one-way) trips daily employee commute trips by automobile (passenger vehicles and light trucks). Consequently, for the purpose of automobile VMT, the Proposed Project is expected to generate less than the 110 trips per day for employee commute trips and can be screened out from the need of further VMT analysis for employee commute trips in accordance with OPR's guidance for small projects. Thus, the Proposed Project would result in less-than-significant transportation impacts under SB 743 from employee trips and associated automobile VMT.

CEQA Guidelines Section 15064.3(a) specifies that VMT to be analyzed is defined as the amount and distance of automobile travel attributable to a project. It does not require any analysis of increased VMT from heavy-duty truck trips. In fact, in CARB's 2017 Scoping Plan the State's strategy for the goods movement sector is not in VMT reduction, but in advances in technology [ZE and NZE control strategies].

(c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The project does not include any new facilities or land uses that would substantially increase hazards due to geometric design feature or incompatible uses. No impacts would occur.

(d) Would the project result in inadequate emergency access?

The Proposed Project and would not block existing roads or emergency access

routes in the area. Additional large trucks would access the site regularly during facility operations. The City of Orange conducted a traffic study in 2009 including the segments along the frontage of the Proposed Project site. Average Daily Trips were determined to be approximately 22,000. By adding an additional 60 daily truck trips as a result of implementing this Proposed Project.

This would not cause inadequate emergency access to either the site or adjacent areas to the site. No impact would occur, and no mitigation is required.

2.18 Tribal Cultural Resources

19. TRIBAL CULTURAL RESOURCES:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
(i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or				X
(ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.				X

2.18.1 Project Background

A letter was submitted by Pacific BioScience, Inc. to the Native American Heritage Commission (NAHC) Sacred Lands File & Native American Contacts List to perform a Sacred Lands file search. A negative results response was received and no tribal resources have been identified occurring within the Proposed Project area. This letter can be viewed in Attachment K.

2.18.2 Findings

(a) (i) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American

tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

The project site is not listed on any national, state, or local registers of historical places (including those for tribal cultural resources). There are no known tribal cultural resources within the Proposed Project area. There will be no impact.

The Santa Ana Regional Water Quality Control Board reached out to the Gabrieleno Band of Mission Indians – Kizh Nation. As a result of that input, the project is implementing the Mitigation Measures described below.

(a) (ii) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

There are no known tribal cultural resources within the Proposed Project area. There will be no impact.

The Santa Ana Regional Water Quality Control Board reached out to the Gabrieleno Band of Mission Indians – Kizh Nation. As a result of that input, the project is implementing the Mitigation Measures described below.

Mitigation MeasureTCR-1: Retain a Native American Monitor Prior to Commencement of Ground-Disturbing Activities

A. The project applicant/lead agency shall retain a Native American Monitor from or approved by the Gabrieleño Band of Mission Indians – Kizh Nation. The monitor shall be retained prior to the commencement of any "ground-disturbing activity" for the subject project at all project locations (i.e., both on-site and any off-site locations that are included in the project description/definition and/or required in connection with the project, such as public improvement work). "Ground-disturbing activity" shall include, but is not limited to, demolition, pavement removal, potholing, auguring, grubbing, tree removal, boring, grading, excavation, drilling, and trenching.
B. A copy of the executed monitoring agreement shall be submitted to the lead agency prior to the earlier of the commencement of any ground-disturbing activity, or the issuance of any permit necessary to commence a ground-disturbing activity.
C. The monitor will complete daily monitoring logs that will provide descriptions of the relevant ground-disturbing activities, the type of construction activities performed, locations of ground-disturbing activities, soil types, cultural-related materials, and any other facts, conditions,

materials, or discoveries of significance to the Tribe. Monitor logs will identify and describe any discovered TCRs, including but not limited to, Native American cultural and historical artifacts, remains, places of significance, etc., (collectively, tribal cultural resources, or "TCR"), as well as any discovered Native American (ancestral) human remains and burial goods. Copies of monitor logs will be provided to the project applicant/lead agency upon written request to the Tribe.

D. On-site tribal monitoring shall conclude upon the latter of the following (1) written confirmation to the Kizh from a designated point of contact for the project applicant/lead agency that all ground-disturbing activities and phases that may involve ground-disturbing activities on the project site or in connection with the project are complete; or (2) a determination and written notification by the Kizh to the project applicant/lead agency that no future, planned construction activity and/or development/construction phase at the project site possesses the potential to impact Kizh TCRs.

E. Upon discovery of any TCRs, all construction activities in the immediate vicinity of the discovery shall cease (i.e., not less than the surrounding 50 feet) and shall not resume until the discovered TCR has been fully assessed by the Kizh monitor and/or Kizh archaeologist. The Kizh will recover and retain all discovered TCRs in the form and/or manner the Tribe deems appropriate, in the Tribe's sole discretion, and for any purpose the Tribe deems appropriate, including for educational, cultural and/or historic purposes.

Mitigation Measure TCR-2: Unanticipated Discovery of Human Remains and Associated Funerary Objects

A. Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in Public Resources Code Section 5097.98, are also to be treated according to this statute.

B. If Native American human remains and/or grave goods discovered or recognized on the project site, then all construction activities shall immediately cease. Health and Safety Code Section 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and all ground-disturbing activities shall immediately halt and shall remain halted until the coroner has determined the nature of the remains. If the coroner recognizes the human remains to be those of a Native American or has reason to believe they are Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission, and Public Resources Code Section 5097.98 shall be followed.

C. Human remains and grave/burial goods shall be treated alike per California Public Resources Code section 5097.98(d)(1) and (2).

D. Construction activities may resume in other parts of the project site at a minimum of 200 feet away from discovered human remains and/or burial goods, if the Kizh determines in its sole discretion that resuming construction activities at that distance is acceptable and provides the project manager express consent of that determination (along with any other mitigation measures the Kizh monitor and/or archaeologist deems necessary). (CEQA Guidelines Section 15064.5(f).)

E. Preservation in place (i.e., avoidance) is the preferred manner of treatment for discovered human remains and/or burial goods. Any historic archaeological material that is not Native American in origin (non-TCR) shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the

Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it shall be offered to a local school or historical society in the area for educational purposes.
F. Any discovery of human remains/burial goods shall be kept confidential to prevent further disturbance.

Mitigation Measure TCR-3: Procedures for Burials and Funerary Remains:

A. As the Most Likely Descendant ("MLD"), the Koo-nas-gna Burial Policy shall be implemented. To the Tribe, the term "human remains" encompasses more than human bones. In ancient as well as historic times, Tribal Traditions included, but were not limited to, the preparation of the soil for burial, the burial of funerary objects with the deceased, and the ceremonial burning of human remains.
B. If the discovery of human remains includes four or more burials, the discovery location shall be treated as a cemetery and a separate treatment plan shall be created.
C. The prepared soil and cremation soils are to be treated in the same manner as bone fragments that remain intact. Associated funerary objects are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later; other items made exclusively for burial purposes or to contain human remains can also be considered as associated funerary objects. Cremations will either be removed in bulk or by means as necessary to ensure complete recovery of all sacred materials.
D. In the case where discovered human remains cannot be fully documented and recovered on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to recommend diverting the project and keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials will be removed.
E. In the event preservation in place is not possible despite good faith efforts by the project applicant/developer and/or landowner, before ground-disturbing activities may resume on the project site, the landowner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects.
F. Each occurrence of human remains and associated funerary objects will be stored using opaque cloth bags. All human remains, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items should be retained and reburied within six months of recovery. The site of reburial/repatriation shall be on the project site but at a location agreed upon between the Tribe and the landowner at a site to be protected in perpetuity. There shall be no publicity regarding any cultural materials recovered.
G. The Tribe will work closely with the project's qualified archaeologist to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be prepared and shall include (at a minimum) detailed descriptive notes and sketches. All data recovery data recovery-related forms of documentation shall be approved in advance by the Tribe. If any data recovery is performed, once complete, a final report shall be submitted to the Tribe and the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive and/or destructive diagnostics on human remains.

2.19 Utilities and Service Systems

16. UTILITIES AND SERVICE SYSTEMS: Would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?				X
(b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?				X
(c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
(d) Generate solid waste in excess of State or local standards in excess of the capacity of local infrastructure				X
(e) Negatively impact the provision of solid waste services or impair the attainment of solid waste reduction goal?				X
(f) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?				X

2.19.1 Project Background

The Proposed Project area is an abandoned mine pit and has no existing utilities. Filling of the pit will not require any installation of utilities or service systems.

2.19.2 Findings

(a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

The Proposed Project would not require any changes to local utility systems. The

Proposed Project does not require connection to a Community Services District sewer and/or water line. In addition, the Proposed Project does not include development that has the potential to increase the need for additional water and sewer services, power, natural gas, or telecommunication facilities. There would be no impact.

(b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

The Proposed Project does not include development that has the potential to increase the need for additional water and sewer services, or storm water drainage facilities. There would be no impact.

(c) Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

The Proposed Project would not affect water and/or sewer services in the area. There would be no impact.

(d) Would the project generate solid waste in excess of State or local standards in excess of the capacity of local infrastructure?

The Proposed Project will fill an abandoned mine pit. These project activities would not generate solid waste in excess of State or local standards in excess of the capacity of local infrastructure; therefore, there would be no impact.

(e) Would the project negatively impact the provision of solid waste services or impair the attainment of solid waste reduction goal?

The Proposed Project will fill an abandoned mine pit. These activities would not negatively impact the provision of solid waste services or impair the attainment of solid waste reduction goals; therefore, there would be no impact.

(f) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

The Proposed Project will fill an abandoned mine pit. These activities will not generate solid waste or require waste disposal. Therefore there would be no impact to any federal, state, or local management and reduction statutes and regulations related to solid waste.

2.20 Wildfire

12. WILDFIRE: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Impair an adopted emergency response plan or emergency evacuation plan?				X
(b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?				X
(c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?				X
(d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				X

2.20.1 Project Background

The Proposed Project is located within a non-very high fire hazard severity zone (non-VHFHSZ), as designated by CalFire (CalFire 2021). Adjacent lands to the east are located within a VHFHSZ.

2.20.2 Findings

(a) Would the Proposed Project Impair an adopted emergency response plan or emergency evacuation plan?

The Proposed Project is located within a non-VHFHSZ and would not impair any emergency response or evacuation plans. There would be no impact.

(b) Would the Proposed Project due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

The Proposed Project is located in an abandoned mine pit, and is naturally resistant to winds and other factors that would otherwise exacerbate wildlife

risks. There would be no impact.

(c) Would the Proposed Project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

The Proposed Project does not include the development, or maintenance of, roads, fuel breaks, power lines or other utilities that would exacerbate fire risk. There would be no impact.

(d) Would the Proposed Project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

The Proposed Project will increase stability of slopes found onsite as the abandoned pit is filled in over time. Additionally, slopes along Santiago Creek will be recontoured to a more stable angle. These project designs will therefore have no impact on exposing people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

2.21 Mandatory Findings of Significance

21. MANDATORY FINDINGS OF SIGNIFICANCE	Potentially significant impact	Less than significant with mitigation	Less than significant impact	No impact
(a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?			X	
(b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?				X
(c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				X

2.21.1 Findings

(a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

As discussed in the Biological Resources section of this document, the Proposed Project has the potential to significantly affect special status wildlife species; however through the avoidance and minimization measures and mitigation outlined in the Biological Opinion, and Low-effect Habitat Conservation Plan, impacts to the environment, wildlife species, and their habitat are considered to be less than significant.

All mitigation measures that will be implemented for the Proposed Project can be viewed in Attachment L.

(b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

The Proposed Project will not result in any cumulatively considerable effects when compared with past, current, and future projects.

(c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

The Proposed Project has no environmental effects that will substantially affect human beings, either directly or indirectly.

3 DETERMINATION

On the basis of this initial evaluation:

I find that the Proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	❑
I find that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A NEGATIVE DECLARATION will be prepared.	■
I find that the Proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	❑

Reviewed By:

XXXXX
Santa Ana Regional Water Quality Control Board
Permitting Unit

Date Signed:

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Attachments

Attachment A:

OC Reclamation Low-Effect Habitat Conservation Plan
&
Habitat Mitigation & Monitoring Plan

LOW-EFFECT HABITAT CONSERVATION PLAN

FOR THE

ISSUANCE OF AN INCIDENTAL TAKE PERMIT UNDER SECTION 10(A)(1)(B)

OF THE ENDANGERED SPECIES ACT

FOR THE

FEDERALLY LISTED AS ENDANGERED

LEAST BELL'S VIREO

(*VIREO BELLII PUSILLUS*)

OC RECLAMATION MINE

ORANGE, CALIFORNIA

Pacific BioScience, Inc.

March 2018

LOW-EFFECT HABITAT CONSERVATION PLAN

FOR THE

ISSUANCE OF AN INCIDENTAL TAKE PERMIT UNDER SECTION 10(A)(1)(B)

OF THE ENDANGERED SPECIES ACT

FOR THE

FEDERALLY LISTED AS ENDANGERED

LEAST BELL'S VIREO

(*VIREO BELLII PUSILLUS*)

OC RECLAMATION MINE

ORANGE, CALIFORNIA

Submitted to:

Chandler's Sand and Gravel, LLC
17392 Daimler Street
Irvine, California 92614

Prepared by:

Pacific BioScience, Inc.
156 Woodburne
Newport Beach, California 92660

Pacific BioScience, Inc.

March 2018

EXECUTIVE SUMMARY

This Low-Effect Habitat Conservation Plan (HCP) has been prepared to support an application for an incidental take permit from the United States Fish and Wildlife Service (Service) pursuant to Section 10(a)(1)(B) of the federal Endangered Species Act of 1973 (Act), as amended (United States Code Title 16, Section 1531 et seq.) to incidentally take the federally endangered least Bell's vireo (*Vireo bellii pusillus*; LBV). The OC Reclamation Project (Project) proposes to fill and grade an abandoned pit mine located in the City of Orange. Mining operations stopped in the 1960's. Although the entire project site has been disturbed from past mining operations, natural plant communities now occur in some areas on these parcels and adjacent land. A protocol-level survey for LBV completed by FirstCarbon Solutions in spring/summer 2016 identified one territorial LBV and one pair of LBV within the project site. The federally threatened coastal California gnatcatcher (*Polioptila californica californica*; CAGN) also occurs onsite, but potential effects to CAGN from the Project will be addressed through participation in the existing Orange County Central/Coastal Subregion Natural Communities Conservation Plan/Habitat Conservation (NCCP/HCP) and, therefore, are not addressed by this HCP.

The proposed project is to regrade the approximately 14-acre property and fill the abandoned mine onsite. No development beyond regrading the property and filling the mine is proposed as part of this project. The Project will remove approximately 2 acres of LBV-occupied willow woodland at the bottom of the abandoned mine pit.

Phase one of the proposed project will remove soil from the bottom of the pit and upper bank along Santiago Creek. This material will be used to create a berm at the north end of the site to complete the perimeter of the pit. This phase of the project is expected to last approximately two months. Phase two will fill the pit with soil from offsite over a period of about 4.5 years.

Chandler's Sand and Gravel (herein referred to as the "Applicant") proposes to mitigate impacts to LBV by 1) excavating a bench along a portion of Santiago Creek within the project boundary and creating 1.48 acres of habitat; 2) enhancing an additional 1.88 acres of existing riparian vegetation onsite in Santiago Creek; and 3) enhancing 2.53 acres of riparian vegetation at an offsite location on the Saddle Creek property in the County of Orange. Habitat restoration and enhancement will be implemented by a Service-approved restoration contractor, and long-term management of both the onsite and offsite restoration/enhancement areas will be conducted by Rivers and Lands Conservancy and financed by the Applicant.

The offsite restoration site is located in unincorporated Orange County approximately 10 miles southeast of the proposed project site near the intersection of E. Santiago Canyon Road and Live Oak Canyon Road. Both the onsite and offsite restoration/enhancement areas will be protected in perpetuity by a conservation easement, and an endowment will be established to fund management of the restoration/enhancement areas in perpetuity. The Applicant requests a permit for Project-related incidental take of LBV for a ten- year period commencing on the date of permit approval.

This HCP has been prepared in coordination with the Service to fulfill the requirements of a Section 10(a)(l)(B) permit application for the proposed Project. The mitigation measures contained herein should result in greater long-term conservation value for LBV.

Contents

INTRODUCTION

PURPOSE AND NEED

This Low-Effect Habitat Conservation Plan (HCP) has been prepared to support an application for a permit from the United States Fish and Wildlife Service (Service) pursuant to Section 10(a)(l)(B) of the Endangered Species Act of 1973 (Act), as amended (United States Code Title 16, Section 1531 et seq.), to incidentally take the federally endangered least Bell's vireo (*Vireo bellii pusillus*; LBV). Field surveys show that the Project site supports LBV (Pacific BioScience, Inc.) The federally threatened coastal California gnatcatcher (*Polioptila californica californica*; CAGN) also occurs on the Project site, but potential effects to CAGN from the Project will be addressed through participation in the existing Orange County Central/Coastal Subregion Natural Communities Conservation Plan/Habitat Conservation (NCCP/HCP)[1] and, therefore, are not addressed by this HCP.

This Project includes regrading of the 14-acre property and filling the abandoned pit mine onsite. Since the mine was abandoned in the 1960's the steep walls of the pit have continued to erode, creating a hazard to adjacent parcels. The site will be filled and graded over a 4.5-year period. Once completed, the project site will be in a safer condition. There is no current plan for development of the site when filling and grading is completed.

The Applicant is seeking a permit for incidental take of LBV in the course of otherwise lawful activities associated with construction of the Project. Such authorization is necessary because activities associated with the construction of the Project are anticipated to harm LBV by removing breeding, feeding, and sheltering habitat for up to two pairs of this species.

REGULATORY REQUIREMENTS

Federal Endangered Species Act

The Act provides for the protection and conservation of fish, wildlife, and plants that have been federally listed as threatened or endangered. Activities otherwise prohibited by Section 9 of the Act and subject to the civil and criminal enforcement provisions of Section 11 of the Act may be authorized for federal entities, pursuant to the requirements of Section 7 of the Act, and for other persons, pursuant to Section 10 of the Act.

Section 10(a)(2)(A) of the Act states that no permit may be issued by the Secretary of the Interior (Secretary) authorizing any taking referred to in Section 10(a)(l)(B) unless the Applicant submits to the Secretary an HCP that specifies:

1. The impact that will likely result from such taking;
2. What steps the applicant will take to minimize and mitigate such impacts and the funding that

[1] Pursuant to the NCCP/HCP, the Applicant will pay an "in-lieu fee" to the Natural Communities Coalition (the non-profit organization responsible for implementing the NCCP/HCP) based on the acres of coastal sage scrub impacted by the Project.

will be available to implement such steps;

3. What alternative actions to such taking the applicant considered and the reasons why such alternatives are not being utilized; and
4. Such other measures that the Secretary may require as being necessary or appropriate for the purposes of the plan.

This HCP has been prepared in coordination with the Service to fulfill the requirements of Section 10(a)(2)(A) of the Act as part of an application for a Section 10(a)(l)(B) incidental take permit being sought for the proposed Project.

The Applicant is proposing this plan be evaluated as a "low-effect" HCP. A low-effect HCP involves "(1) minor or negligible effects on federally listed, proposed, or candidate species and their habitats covered under the HCP; and (2) minor or negligible effects on other environmental values or resources" (Service and National Oceanographic and Atmospheric Administration [NOAA] 1996). In addition, "'low-effect' incidental take permits are those permits that, despite their authorization of some small level of incidental take, individually and cumulatively have a minor or negligible effect on species covered in the HCP" (Service and NOAA 1996).

National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires federal agencies to analyze the environmental effects of their actions (in this instance, the issuance of an incidental take permit) and include public participation in the planning and implementation of their actions. The NEPA compliance process helps federal agencies make informed decisions with respect to the environmental consequences of their actions and ensures that measures to protect, restore, and enhance the environment are included, as necessary, as a component of their actions.

Compliance with NEPA is obtained through one of three methods: (1) preparation of an Environmental Impact Statement (generally used for high-effect HCPs), (2) preparation of an Environmental Assessment (generally used for moderate-effect HCPs), or (3) a Categorical Exclusion. Low-effect HCPs are categorically excluded under NEPA, as defined by United States Department of the Interior Manuals 516 Departmental Manual 2, Appendices 1 and 2, and 516 Departmental Manual 6, Appendix 1.

PERMIT APPLICANT/HOLDER

Chandler's Sand & Gravel, LLC is the Applicant for the Section 10(a)(1)(B) permit. If a permit is issued by the Service, the Applicant will be the permit holder of the incidental take permit.

PERMIT DURATION

The proposed duration of the Section 10(a)(l)(B) permit for this Project is 10 years from the date of issuance by the Service. The permit duration will allow the Applicant to prepare final design of the Project, complete construction of the proposed Project, and complete Project-related restoration and enhancement. Habitat removal within the abandoned mine and associated impacts to LBV will occur at the beginning of project implementation (phase one), and habitat within the impact area will not be allowed to re-grow.

PERMIT AND PLAN AREA

The geographic area covered by this HCP (Appendix A, Figure 1: Project Site/Mitigation Locations) (i.e., the Plan Area [Service and NOAA 2016]) consists of the entire 14-acre Project site (Appendix A, Figure 2: Project Location) and the offsite mitigation area on the Saddle Creek property (Appendix A, Offsite Mitigation Location). The permit area (i.e., where the incidental take authorization applies) includes the specific 14-acre Project site located at the northwest corner of the intersection of E. Santiago Canyon Blvd. and Cannon Road in the City of Orange, Orange County, California. The Project site is located approximately 10 miles from the proposed offsite mitigation area at Saddle Creek.

SPECIES TO BE COVERED UNDER PERMIT

Incidental take coverage is requested for the following species:

Species:	**Federal Status:**
Least Bell's vireo (*Vireo bellii pusillus*)	Endangered

PROJECT DESCRIPTION/ACTIVITIES COVERED BY PERMIT

Chandler Sand and Gravel proposes to fill the abandoned mine pit and grade the Project site. The final grading plan is included in Appendix A, Site Conditions/Grading Exhibits. Note that the grading plan included in the Least Bell's Vireo Survey Report (FirstCarbon Solutions) is outdated and should not be considered with the current grading plan as seen in Appendix A. The proposed project will be implemented in two phases.

The first phase of the project will include grubbing and clearing vegetation and stockpiling topsoil. A bench and berm of soil located along the southern boundary of Santiago Creek will be created using material excavated from the pit to a depth of 5-10 feet and from higher elevations on the site. The berm will be covered with 4-6 inches of topsoil stockpiled from the existing upland/coastal sage scrub area. Equipment used for this phase will include 1 excavator, 3 scrapers, and 1 water truck. All equipment will have rubber tires and are compliant with Tier 4 air compliance measures, which minimize air quality impacts. Normal hours of operation from 7am to 5pm Mondays through Fridays are expected. This phase will last approximately two months.

Transport trucks, typically super 10 (10 wheeler), bobtail two-axle trucks, and two-axle pick-up trucks, will be used to transport material onto the site. Fill material will enter the site from N. Santiago Blvd., deposit fill material while circling the perimeter of the pit in a clock-wise fashion, then exit onto E. Santiago Canyon Road. Scheduling of transport trucks will occur based on availability and balanced with market rates of disposal to meet the goals of Chandler Sand and Gravel's business plan. Compaction equipment used will be 1 dozer (size D-8), 1 loader, and 1 water truck. This phase is expected to last approximately 4.5 years.

Approximately 140,000 yards of fill material is required to construct the berm in phase one. This material will be excavated from the abandoned pit mine to a depth reaching bedrock or naturally compacted material (approximately 10 feet) with the balance excavated from adjacent slopes. Approximately 1,240,000 yards of material is required to fill the site to final grade. It is anticipated that 60 truck trips per day, 30 in and 30 out, (300 per week, 1,200 per month, and 14,400 per year) will be needed during phase two. The project site will be closed to truck traffic during drop-off and pick-up times of students at the nearby Oakridge Private School during all phases. Due to the ingress/egress route, only up to 30 trucks trips per day will occur along N. Santiago Blvd, further minimizing effects to the school. This proposed project will be completed when the elevations of the grading plan are achieved.

Implementation of the proposed Project will permanently remove 2 acres of occupied LBV habitat located at the bottom of the pit mine. To mitigate impacts to the LBV, 1.48 acres of riparian vegetation will be created, and an additional 1.88 acres of existing riparian vegetation will be enhanced onsite within Santiago Creek. Additionally, 2.53 acres of riparian vegetation will be enhanced at the offsite mitigation location on the Saddle Creek property

ENVIRONMENTAL SETTING/BIOLOGICAL RESOURCES

EXISTING ENVIRONMENTAL SETTING OF PROJECT SITE

Site Location

The project site (Assessor's Identification Numbers [AIN]: 370-231-13, 370-231-15 and 370-231-006) is located north west of the intersection of East Santiago Canyon Road and Cannon Street in the City of Orange (Appendix A, Figure 2: Project Location). The site is located on U.S. Geological Survey 7.5 minute topographic quadrangle map Orange.

The proposed offsite mitigation (AIN: 858-031-01 and 856-021-26) is located north east of the intersection of East Santiago Canyon Road and Live Oak Canyon Road in the unincorporated community of Trabuco Canyon (Appendix A, Figure 3: Offsite Mitigation Location). The site is located on U.S. Geological Survey 7.5 minute topographic quadrangle map Santiago Peak.

Land Use

Santiago Creek bounds the project site on the north with residential development further to the north and to the south across East Santiago Canyon Road. Commercial development occurs to the west and disturbed open space further to the east across Cannon Street. The proposed project site is surrounded by development or disturbed open space.

The land use directly adjacent to the offsite mitigation location is characterized by open space. Further to the west and northwest are residential developments. This offsite location is on the Saddle Creek property, an existing conserved property that includes several different restoration projects that are providing mitigation for development projects within the vicinity. Existing plant communities at the offsite location include: coastal sage, oak woodland, and mulefat/willow thicket with episodic drainages. Efforts covered within this HCP will include restoration of "pocket" areas not already included in existing restoration or enhancement efforts.

Topography and Soils

Topography on the project is dominated by the excavated pit mine with severely sloping walls on all sides except the northern boundary where Santiago Creek occurs. A berm with a gentle broken slope separates Santiago Creek from the excavated pit. Elevations on the site range from 285 above msl at the bottom of the pit to 355 feet along the southern boundary.

The project site is mapped as containing four soil series. A soil series is a group of soils with similar profiles. These profiles include major horizons with similar thickness, arrangement, and other important characteristics, which may promote favorable conditions for certain biological resources. These four soils series include the following:

168 – Modjeska gravelly loam, 0 to 2 percent slopes: consists of deep, well-drained soils

formed in mixed alluvium. Found on the coastal plain of southern California at elevations of 200 to 1,500 feet and often cultivated. Typically a grayish-brown or brown gravelly loam or gravelly fine sandy loam with less than one percent organic matter (Soil Survey Staff 2015).

185-Pits: consists of open excavations from which soil and underlying material, mostly sand and gravel, have been removed for construction. Present land use is construction material, idle land, or ground water recharge if these areas are in a streambed (Soil Survey Staff 2015).

194-San Emigdio fine sandy loam, **0 to 2 percent slopes**: consists of very deep, well-drained soils that formed in dominantly sedimentary alluvium. Found on fans, floodplains, and narrow valleys at elevations of 100 to 2,000 feet and often historically cultivated or grassland. Typically a light-brownish gray fine sandy loam with many very fine roots throughout (Soil Survey Staff 2015).

197-Soboba gravelly loamy sand, **0 to 5 percent slopes**: consists of deep, excessively drained soils that formed in alluvium from predominantly granitic rock sources. Found on alluvial fans and floodplains at elevations of 25 to 3,700 feet and historically annual grass pasture. Typically a grayish brown stony loamy sand that is loose and very friable with many fine roots and interstitial pores (Soil Survey Staff 2015).

The topography at the offsite mitigation site is characterized as low hills with incised episodic streams. Elevation ranges from approximately 1200 to 1300 ft msl. There are four soil series at the offsite mitigation location and they are as follows:

101- Alo clay, 15 to 30 percent slopes: consists of moderately deep, well drained soils found on mountains at elevations of 200 to 3,250 ft. They formed in material weathered from shale or sandstone on mountains. These soils are well drained; low to very high runoff; with slow permeability after soil cracks are swollen shut.

134- Calleguas clay loam, 40 to 75 percent slopes, eroded: consists of very shallow and shallow, well drained soils formed on uplands, hills and mountains in material weathered from sedimentary rocks. These soils are exposed and often eroded south-facing slopes. Elevations are 100 to 2,800 ft.

142- Cieneba sandy loam, 30 to 75 percent slopes, eroded: consists of very shallow and shallow, somewhat excessively drained soils that formed in material weathered from granite rock. The soils are found at elevations of 500 to 4,000 ft.

207- Sorrento loam, 2 to 9 percent slopes: consists of very deep, well drained soils that formed in alluvium mostly from sedimentary rocks. These soils are on alluvial fans and stabilized floodplains at elevations of 25 to 2,100 feet.

COVERED SPECIES

Least Bell's Vireo

Status and Distribution. Historically, least Bell's vireo was abundant in riparian habitats throughout the central valley, coastal southern California, and in scattered oases and canyons in California deserts. Populations declined dramatically due to widespread destruction and degradation of riparian habitats and brood parasitism by the brown-headed cowbird (*Molothurs ater*). It is now a rare, local, summer resident below about 600 m (2000 ft) in willows and other low, dense valley foothill riparian habitat and lower portions of canyons mostly in San Benito and Monterey Counties; in coastal southern California from Santa Barbara County south; and along the western edge of deserts in desert riparian habitat. Current least Bell's vireo populations in southern California are concentrated in the Santa Ana River at Prado Basin in Riverside County, and in drainages within San Diego County.

Life History. The least Bell's vireo is a small insectivorous bird, which is colored olive-gray above and whitish underneath and is federally and state listed endangered species. This migratory songbird requires riparian woodlands with a dense understory. Least Bell's vireo typically occupy areas with willows (*Salix* sp.) and mulefat (*Baccharis salicifolia*), either near water or in dry areas along river bottoms. They build an open-cup nest of pieces of bark, fine grasses, plant down, and sometimes horse hair. Nests are often placed on a slender branch of willow, other shrub, mesquite, or other small tree, usually 0.6-0.9m (2-3 ft), but sometimes 0.3-3.0 m (1-10 ft), above ground.

Occurrences on the Project Site. Protocol level surveys for LBV were conducted in 2016 and one LBV was detected during six of the eight surveys. Additionally, one pair of LBV was observed during the 5th protocol survey. The individual LBV was observed throughout the southern willow scrub habitat located within the project site. The pair of LBV was only observed once and was located in the northern portion of the southern willow scrub habitat. As such, it is presumed that the project site supports up to two pairs of LBV.

POTENTIAL BIOLOGICAL IMPACTS/TAKE ASSESSMENT

Impacted LBV habitat consists of two acres of mature willow located at the bottom of a basin in an abandoned pit mine. Up to two pairs of LBV have been observed during focused surveys. If left to natural processes, the basin would likely fill due to erosion of steep slopes (as observed), and LBV habitat would be reduced in size and quality, although this would likely occur over many decades.

The proposed Project will result in permanent loss of the two acres of occupied LBV habitat as a result of grading and filling the Project site. Habitat remaining onsite after implementation of the proposed project is not expected to be sufficient to support LBV without enhancement or creation. Although vireos are migratory, they return to the same site to nest year after year and are territorial. Therefore, removing a vireo pair's breeding territory will force the pair to attempt to establish a new territory in nearby habitat. There is suitable LBV breeding habitat to the east of the Project site, but this habitat is already occupied by LBV. If displaced birds cannot find suitable habitat to forage and shelter in, they will be more vulnerable to predation and otherwise may die or be injured. If vireos successfully establish territories in nearby habitat, they are expected to experience reduced productivity (e.g., delayed initiation or prevention of nest building, fewer nesting attempts per season, and/or overall reduction in reproductive output) due to reduced availability of foraging and breeding habitat and increased territorial interactions. Therefore, the loss of habitat onsite will result in harm to LBV. Noise and activity from construction and restoration activities may result in minor disturbance to LBV within the restoration sites and adjacent habitat but is not anticipated to significantly impact LBV survival or reproduction.

CONSERVATION STRATEGY

This HCP's conservation strategy is to compensate for the loss of 2 acres of occupied LBV habitat with the creation and enhancement of 5.36 acres total of habitat at two locations. There will be 1.48 acres of habitat created onsite through the construction of a bench adjacent to Santiago Creek, 1.88 acres enhanced onsite within Santiago Creek, and 2.53 acres enhanced offsite on the Saddle Creek property. See Table 1: Mitigation Amounts below for a summary of acreage and Figures 5-7 in Appendix A for locations. A Service-approved restoration contractor will implement habitat creation and enhancement at the onsite and offsite locations, and Rivers and Lands Conservancy will be the holder of the conservation easement and perform long-term management at both the onsite and offsite locations. The Applicant will provide all financing to implement the conservation strategy. The financial arrangement with Rivers and Lands Conservancy will include endowments for long-term management and oversight of a conservation easement for both the onsite and offsite restoration/enhancement sites. Rivers and Lands Conservancy is dedicated to the acquisition, restoration, and management of open space for preservation of the land in perpetuity, with the primary purpose of protecting biological diversity.

Table 1: Mitigation Amounts

ONSITE MITIGATION	**ACRES**
Enhancement Area	1.88
Creation Area	1.48
OFFSITE MITIGATION	**ACRES**
Enhancement Area	2.53
TOTAL MITIGATION AREA	**5.36**

The slopes of the onsite pit mine are steep and eroding such that adjacent parcels to the south and west are at risk and the open pit will continue to fill. Therefore, habitat for LBV on the project site would likely degrade over time without the proposed Project.

With stabilization of slopes onsite, creation of LBV habitat along Santiago Creek, enhancement of existing habitat in Santiago Creek and on the Saddle Creek property and long-term management by the Rivers and Lands Conservancy, the Project will result in higher long-term conservation value for LBV. Furthermore, the lands enhanced and created through this Project will be protected in perpetuity through a conservation easement.

With the implementation of this HCP, impacts to LBV would be mitigated to the maximum extent practicable.

BIOLOGICAL GOAL

The long-term goal of this HCP is to preserve, manage, and monitor LBV habitat significantly greater in area and superior in ecological function to that presently on the Project site and to improve the potential for sustaining this habitat in perpetuity. The Project site is largely surrounded by existing development, with the exception of nearby ponds and reaches of Santiago Creek, and has little long- term conservation value as it stands today.

It is the goal of this HCP to provide long-term suitable LBV habitat onsite by creating 1.48 acres of LBV habitat near Santiago Creek. The existing steep, upper slope of Santiago Creek will be excavated and stabilized with creation of a lower slope and bench located along the creek and planted with species noted in Table 2: Planting List, predominantly willow (*Salix* sp.). The bench will be constructed approximately 5-6 feet above low-flow water level, and the slope immediately above the bench will be stabilized with large un-grouted rock. Plants, predominantly mulefat, will be installed within the un-grouted rock and on the slope above the bench. Planting details will be provided in a Habitat Mitigation and Monitoring Plan.

Table 2: Planting List

CONTAINER	SEED
Artemisia douglasiana	*Amsinckia menziesii*
Baccharis salicifolia	*Ambrosia psilostachya*
Elymus condensatus	*Lupinus bicolor*
Mimulus aurantiacus	*Melica imperfecta*
M. cardinalis	*Muhlenbergia rigens*
Muhlenbergia rigens	*Phacelia cicutarium*
Platanus racemose	*Phacelia minor*
Populus fremontii	*Pseudognaphalium californicum*
Rosa californica	*Scrophularia californica*
Rubus ursinus	*Sisyrinchium bellum*
Salix gooddingii	*Solanum douglasiana*
S. laevigata	*Vulpia microstachys*
S. lasiolepis	
Sambucus nigra ssp. caerulea	
Vitis californica	
Washingtonia filifera	

The remainder of Santiago Creek within the project limits, 1.88 acres total, will be enhanced by removing non-native plant species and installing species listed in Table 2: Planting List, predominantly willow. It should be noted that a parcel of land (0.03 acres) located within Santiago Creek and immediately adjacent to the site was acquired by the applicant in anticipation of mitigation for LBV. This parcel is included in enhancement and conservation of onsite habitat.

Additional mitigation will be to enhance 2.53 acres of LBV habitat offsite on the Saddle Creek property. As stated previously, enhancement and conservation of habitat is ongoing within Saddle Creek North for mitigating impacts resulting from other nearby development projects. Efforts as part of this HCP will help to enhance and conserve the high quality habitat in this area.

Enhancement of Saddle Creek includes removal of non-native plant species and installing native species noted in Table 2: Planting List. It also includes excavating slopes and upland areas along episodic drainages and installing un-grouted rock to slow water flow, providing greater saturation of adjacent soils. The plantings will include a combination of willows, mulefat, and transitional riparian/upland vegetation as appropriate for the hydrological conditions. LBV have been observed within the same drainage downstream approximately one-half mile, and the restoration at Saddle Creek is likely to provide foraging and dispersal habitat for vireo (See Appendix A, Figures 6-7).

CONSERVATION MEASURES

Actions to Avoid and Minimize Direct Impacts

The following measures will be implemented by the Applicant to avoid, minimize, and mitigate potential impacts to LBV:

CM 1. A designated Project Biologist[2] approved by the Service will monitor construction activities to ensure that all avoidance and minimization measures are properly followed. The Applicant will submit the biologist's name, address, telephone number, and work schedule on the project to the Service prior to initiating project impacts. The Project Biologist will be provided with a copy of the incidental take permit for the Project and will attend all preconstruction meetings, be present during all vegetation clearing activities, monitor construction activities during phase one on a weekly basis, and monitor activities during phase two on a monthly basis.

CM 2. The Project Biologist will halt work if necessary to avoid potential unanticipated impacts to vireo or its habitat and will confer with the Service as necessary to ensure the proper implementation of species and habitat protection measures. The Project Biologist will report any non-compliance issue to the Service within one business day of observing the issue.

CM 3. All construction personnel that will be involved in the onsite project construction will be required to participate in a pre-construction environmental training program provided by the Project Biologist to understand basic ecology of federally listed species potentially present in or adjacent to the project footprint, laws, penalties for violations, avoidance/minimization obligations, concerns, and the communication path if an issue arises on the project.

CM 4. Prior to construction, under the supervision of the Project Biologist, highly visible barriers (e.g., orange construction fencing) will be installed along the construction boundary adjacent to native habitat to identify Project impact and avoidance areas. Construction fencing and markers will be maintained in good repair until the completion of project construction and removed upon project completion. No project activity of any type, including storage of equipment or supplies, structures, and use of motor vehicles and heavy equipment, will be permitted within Project avoidance areas. Silt fence barriers will be installed at the edge of the construction boundary to prevent accidental deposition of fill material in areas where vegetation is immediately adjacent to planned grading activities.

CM 5. The clearing and grubbing of riparian vegetation will take place outside the LBV nesting season (March 15 through September 15).

CM 6. Construction site Best Management Practices (BMPs) outlined in the project's Storm Water Pollution Prevention Plan (SWPPP) will be implemented to avoid and minimize erosion, sedimentation, and pollution from entering native habitat.

CM 7. Invasive plant species (i.e., plant species listed in the California Invasive Plant Council [Cal-IPC] California Invasive Plant Inventory with a High or Moderate rating) will be removed from the project work area and controlled during construction.

CM 8. If nighttime construction is necessary, all project lighting (e.g., staging areas, equipment storage sites, roadway) will be selectively placed and directed toward the construction site and away from adjacent habitats. Construction lighting will be of the lowest illumination necessary for

[2] The Project Biologist will be familiar with vireo and its habitat

safety, and light glare shields will be used to reduce the extent of illumination into adjacent habitats.

CM 9. Trash will be stored in closed containers, shall not be readily accessible to scavengers, and will be emptied when full.

CM 10. Dust control measures will be implemented by the contractor to reduce excessive dust emissions. Dust control measures will be carried out at least two times per day during periods of grading or other activities that would disturb soils, and may include wetting work areas, the use of soil binders on dirt roads, and wetting or covering stockpiles.

CM 11. Fire suppression capability will be available onsite whenever construction occurs during the fire season. Fire suppression equipment will be located on all pieces of equipment during fire season, red flag warnings, and in areas that have a high fire risk (i.e. dry brush).

CM 12. The Applicant will submit a final report to the Service within 120 days of completing both phase one and phase two of the project, including photographs of impact areas and adjacent habitat, documentation that authorized impacts were not exceeded, and documentation that general compliance with all conservation measures was achieved.

CM 13. To offset the project-related permanent impacts to 2.0 acres of LBV-occupied riparian vegetation, the Applicant will fund the creation of 1.48 acres of riparian vegetation onsite, enhancement of 1.88 acres onsite, and enhancement of 2.53 acres offsite.[3] All of the restored habitat will be conserved and managed in perpetuity. Prior to project implementation, the Applicant will implement the following measures related to the proposed restoration:

a. Complete a restoration plan that is reviewed and approved by the Service and identifies the specific locations where the restoration will occur, timeline for implementation, methodology to implement the proposed restoration, and quantitative performance criteria that will be achieved for the restoration to be determined successful.

b. Prior to the start of construction, establish a performance bond that is reviewed and approved the Service that will provide sufficient funding to ensure completion of both onsite and offsite restoration.

c. Complete long-term management plans for the onsite and offsite restoration that are reviewed and approved by the Service and that describe the management actions that will be taken to ensure that the restored habitat is protected and maintained in perpetuity. The long-term management plans will include an estimate of the cost to implement the plan in perpetuity.

d. Establish an endowment or other funding assurance approved by the Service to implement the long-term management plan in perpetuity. The long-term management funds will be held by an organization approved by the Service.

e. Submit a draft conservation easement for the onsite and offsite restoration areas for Service review and approval. The final conservation easement will be recorded within one year of project initiation to allow for minor changes in the boundary of the restoration sites following final grading.

[3] For the purpose of this measure, "restoration" refers collectively to creation and enhancement of habitat.

PLAN IMPLEMENTATION

COMPLIANCE MONITORING AND REPORTING

The Applicant will institute a monitoring and reporting program to ensure that this HCP is properly implemented. Regular monitoring of the enhancement area will allow the progress of the enhancement effort to be assessed and adjusted to ensure success. See Table 3: Biological Monitoring Schedule below. In order to determine the success of the enhancement effort, performance criteria will be established and included in the HMMP. In addition, a contingency plan will be created in the event that the performance criteria are not met.

Table 3: Biological Monitoring Schedule

Biological Monitoring Schedule		
YEAR(S)	**FREQUENCY**	**NUMBER OF VISITS**
1 and 2	Every other month	6
3 and 4	Every other month December through May	5
5	Quarterly	4

The Applicant will provide the Service, on an annual basis, with an HCP Compliance Report describing the activities that have occurred pursuant to take authorizations and an assessment of the status of this HCP until the completion of phase two (filling the pit) and completion of the enhancement portion of the project. The information included in the annual reports will be used by the Service to evaluate the Applicant's compliance with the terms and conditions of this HCP and the Section 10(a)(l)(B) permit.

The annual HCP Compliance Report will include a monitoring report of any construction activities onsite; the occurrence, if any, of changed or unforeseen circumstances; and the methods used to address such circumstances. The annual reports will be submitted to the Carlsbad Fish and Wildlife Office (CFWO) by March l for the previous year. Following submittal of the HCP Compliance Report once phase two grading of the proposed Project is complete, no additional HCP Compliance Reports will be required; however, the Applicant and Rivers and Lands Conservancy will provide documentation regarding the status of both the onsite and offsite LBV enhancement area in accordance with the HMMP.

CHANGED AND UNFORESEEN CIRCUMSTANCES

Changed Circumstances

"Changed circumstances" are defined as changes in circumstances affecting a species or geographic area covered by a conservation plan that can reasonably be anticipated by plan developers and the Service and that can be planned for (e.g., the listing of a new species, or a fire or other natural

catastrophic event in areas prone to such events). The changed circumstances addressed in this HCP include burning of the restoration sites, invasion of the restoration sites by shot hole borer, and listing of one or more species not covered by the HCP. In the event that one of the restoration sites burns prior to completing the restoration and receiving sign-off from the Service, the Applicant will be responsible for continuing restoration activities until the performance criteria identified in the restoration plan are met. If the restoration sites burn after the Service agrees that the sites have been successfully restored, any necessary weeding and supplementary planting will be conducted using funds provided in the endowment, which will include contingency funds to address this possibility. A disease complex involving shot hole borers and associated fungus is causing widespread damage to southern California trees, including willow riparian vegetation. If the restoration sites are invaded by shot hole borer prior to achieving success criteria, the Applicant will coordinate with the Service to determine if it is appropriate to modify the restoration success criteria based on the changed circumstances. If shot hole borer invades the restoration sites after the Service agrees that the sites have been successfully restored, any necessary supplemental planting or other treatment will be conducted using funds provided in the endowment, which includes contingency funds for such activities. In the event of a new listing of one or more species not covered by this HCP during the life of the Section 10(a)(l)(B) permit or the designation of critical habitat for a listed species, the Service and the Applicant will identify actions that might cause jeopardy to, take of, or adverse modification of the designated critical habitat of such listed species, and the Applicant will avoid such actions in the implementation of Covered Activities until approval of an amendment to this HCP to address the newly listed species, or until such measures are no longer required.

Unforeseen Circumstances

"Unforeseen circumstances" are defined in the Department of the Interior's Habitat Conservation Plan Assurances ("No Surprises") Final Rule, issued February 23, 1998 (Federal Register Volume 63, Page 8869) as changes in circumstances affecting a species or geographic area covered by a conservation plan that could not reasonably have been anticipated by the plan developer or the Service at the time of the plan's negotiation and development and that result in a substantial and adverse change in the status of a covered species. Pursuant to the provisions of the No Surprises Rule, the Service may impose additional mitigation or other measures on the Applicant without consent only to the extent allowed by and in conformance with the No Surprises Rule currently codified at Code of Federal Regulations (CFR) Title 50, Part 17.22(b)(5).

Pursuant to the No Surprises Rule at 50 CFR 17.22(b)(5)(iii)(C), the Service has the burden of demonstrating that unforeseen circumstances exist, using the best scientific and commercial data available. The findings must be clearly documented and based on reliable technical information regarding the status and habitat requirements of LBV. The Service will consider the following factors, but not be limited to them:

- The size of the current range of the LBV;
- The percentage of the LBV range adversely affected by this HCP;
- The percentage of the LBV range that has been conserved by this HCP;
- The ecological significance of that portion of the LBV range affected by this HCP;
- The level of knowledge about the LBV and the degree of specificity of the LBV conservation program under this HCP; and
- Whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the LBV in the wild.

If the Service or the Applicant becomes aware of the existence of a potential unforeseen circumstance, each will immediately notify the other of the existence of a potential unforeseen circumstance. Except where there is a substantial threat of imminent significant adverse impacts to the LBV, the Service will provide the Applicant a 30-calendar day notice of a proposed written finding of unforeseen circumstances prior to adopting the finding, during which time the Service will meet with the Applicant to discuss the proposed finding; to provide the Applicant with an opportunity to submit information to rebut or propose amendments to the proposed finding; and to consider any proposed changes to the conservation strategies for the Habitat Authority and this HCP's operating conservation program.

Notwithstanding the limits on conservation and mitigation measures identified above, the permit for this HCP may be revoked if the Service determines that continuation of the Covered Activities would be inconsistent with the criterion set forth in United States Code Title 16, Section 1539(a)(2)(B)(iv) (see also 50 CFR 17.22[b][8]). Nothing in this HCP will preclude the Service or any federal, State, local, or tribal government agency, or a private entity, from taking additional actions at their own expense to protect or conserve the LBV. The existence of unforeseen circumstances does not authorize the Service to violate any federal, State, or local laws, ordinances, regulations, or policies.

AMENDMENTS

Minor Amendments

Any party may propose minor modifications to this HCP by providing notice to the other party. Such notice will include a statement of the reason for the proposed modification and an analysis of its environmental effects, including its effects on operations under the HCP and on covered species. Minor amendments are permissible without amending the underlying Section 10 (a)(l)(B) permit provided that the Service determines the changes do not (1) cause additional take of LBV that was not analyzed in connection with the original HCP, (2) result in operations under the HCP that are significantly different from those analyzed in connection with the original HCP, or (3) have adverse effects on the environment that are new or significantly different from those analyzed in connection with the original HCP. Minor amendments to this HCP may include corrections of typographic, grammatical, and similar editing errors that do not change the intended meaning, or corrections to any maps or exhibits to fix errors in mapping or to reflect previously approved changes in the permit or HCP. All minor amendments proposed by the permit holder to this HCP will be submitted to the Service in writing.

Major Amendments

Amendments to the HCP that do not fit the definition of a minor amendment will be processed as formal amendments to the permit in accordance with all applicable legal requirements, including but not limited to the Act, NEPA, and the Service's permit regulations, including provision for public review and comment.

PERMIT RENEWAL OR EXTENSION

The permit may be renewed or extended with the approval of the Service. The request to renew or extend the permit must be submitted in writing by the permit holder and reference the permit number, certify that all statements and information in the original application are still correct or include a list of changes, and provide specific information concerning what take has occurred under the existing permit and what portions of the Project are still to be completed. The request must be made to the Service's CFWO at least 30 days prior to the permit's expiration date. As long as the request is

received within 30 days prior to the permit's expiration date, the permit will remain valid while the renewal or extension is being processed. The renewal or extension may be approved in writing by the CFWO Field Supervisor. Changes to the HCP that would qualify as a formal amendment will be handled in accordance with the "Amendments" Section of this HCP.

PERMIT TRANSFER

The permit may only be transferred consistent with 50 CFR 13.25, which requires that (1) the permit holder and proposed transferee apply for a permit transfer (through the submission of an assumption agreement between the two parties); (2) the proposed transferee meets all the qualifications for holding a permit; (3) the transferee provides written assurances that it can meet the financial obligations and will implement the terms and conditions of the permit, including any outstanding mitigation requirements; and (4) the transferee provides any additional information the Service deems necessary. After expiration of the permit, any "take" within the permitted geographical boundaries would require reauthorization.

PERMIT SUSPENSION

The Service may suspend or revoke its permit if the Applicant fails to implement the HCP in accordance with the terms and conditions of the permit or if suspension or revocation is otherwise required by law. Suspension or revocation of the Section 10(a)(l)(B) permit, in whole or in part, by the Service shall be in accordance with 50 CFR 13.27–29, l7.32(b)(8).

OTHER MEASURES

Section 10(a)(2)(A)(iv) of the Act states that an HCP must specify other measures that the Service may require as being necessary or appropriate for the purposes of the plan. The Applicant has discussed the proposed elements of this HCP with the Service, and no such additional elements have been identified. Therefore, no additional required measures have been identified for the Project by the Service.

FUNDING

The Applicant, Chandler's Sand & Gravel, LLC, will pay for all costs associated with implementing this HCP. The Long Term Management Plan (LTMP) with associated PAR will be completed and approved by the Service prior to start of construction. Documentation of a performance bond to ensure completion of mitigation for both onsite and offsite locations will be provided to CFWO prior to start of construction. Also, documentation of the endowment to provide for costs for implementing the LTMP and enforcement of the Conservation Easement will be provided to CFWO prior to start of construction.

The Applicant commits to fully fund implementation of this HCP. In the event of material change in the financial position of the Applicant that is likely to impair its ability to fund this HCP, the Applicant will promptly notify the Service and meet with the Service to identify alternative means to carry out its obligations under this HCP. The Applicant acknowledges that failure to provide adequate funding and consequent failure to implement the terms of this HCP in full could result in temporary permit suspension or permit revocation.

ALTERNATIVES TO THE PROPOSED ACTION CONSIDERED

The site plan for the Project, as described above, is the only site plan that is considered feasible to the Applicant. In accordance with the requirements of the Act, the Applicant investigated alternatives that would avoid impacts to the LBV habitat onsite. The feasibility is based on the fact that the site is an abandoned mine and the proposed project is to fill it. It is not possible to preserve LBV habitat and fill the pit mine.

The Applicant also considered the No Action Alternative. Under the No Action Alternative, no development would occur and no application for incidental take would be processed. As this alternative would result in no development of the Project site, LBV habitat would continue to exist on the site; however, no LBV conservation would be provided under this alternative. A no-build alternative would continue to leave the site in an unsafe and eroding condition.

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United States Fish and Wildlife Service (Service) and National Oceanic and Atmospheric Administration (NOAA). 1996. Habitat Conservation Planning and Incidental Take Permit Processing Handbook. Washington, D.C. November 4. Website: http://www.nmfs.noaa.gov/pr/pdfs/laws/hcp_handbook.pdf.

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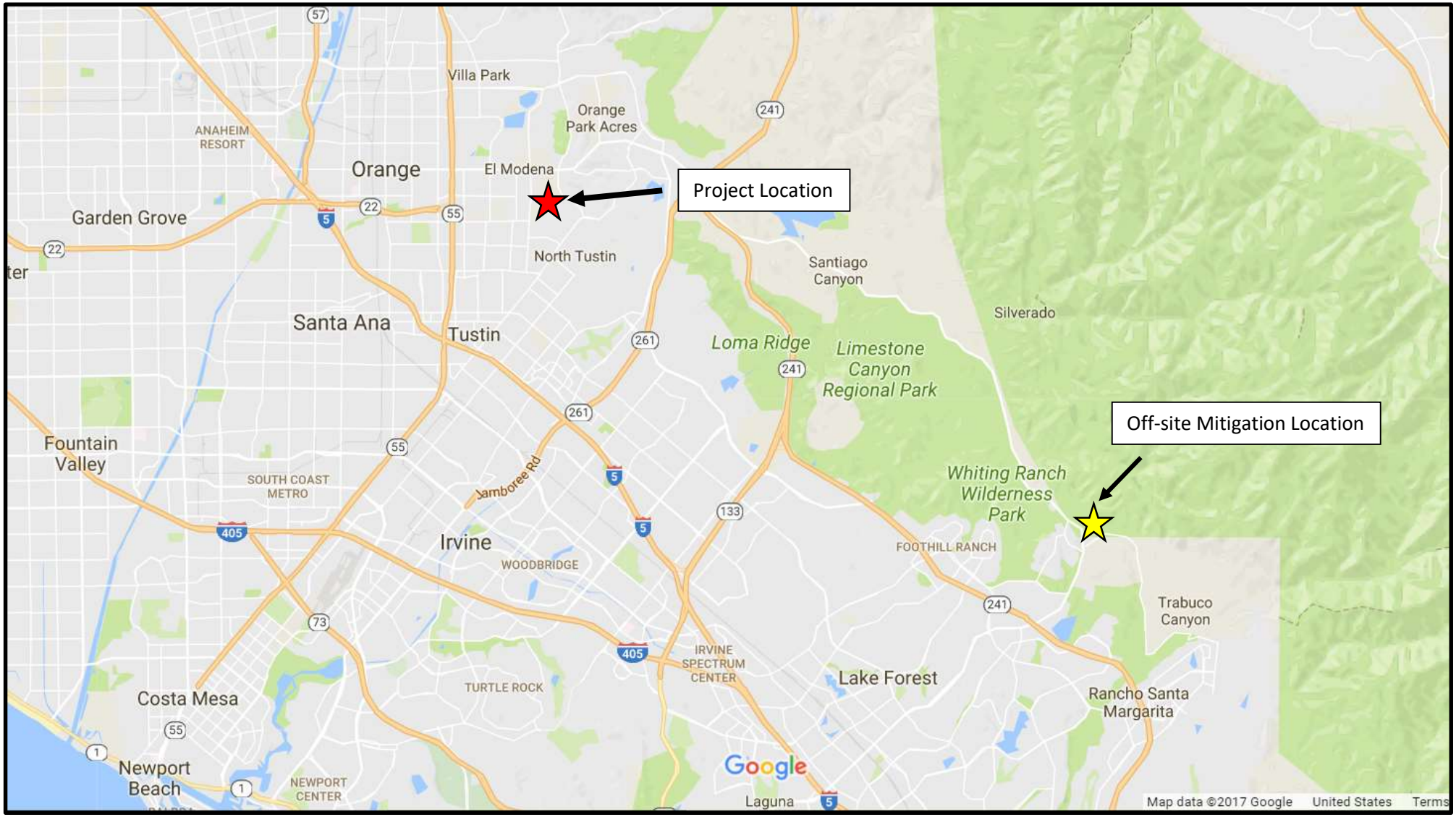
APPENDIX A

FIGURES



Pacific BioScience, Inc.

LEGEND

Project Site

Off-site Mitigation Location

FIGURE 1

OC Reclamation/Saddle Creek Mitigation Site
Project/Mitigation Site Locations

Pacific BioScience, Inc.

LEGEND

Project Location

0 175 350

FEET

FIGURE 2

Chandler's Orange Mine
Project Location

Pacific BioScience, Inc.

LEGEND

Mitigation Site

FIGURE 3

0 175 350
FEET

Saddle Creek Mitigation Site
Off-site Mitigation Location

EXISTING SITE CONDITION
ENVIRONMENTAL EXHIBIT
CITY OF ORANGE, CALIFORNIA

KWC ENGINEERS

SCALE IN FEET

PHASE 1 SITE CONDITION
ENVIROMENTAL EXHIBIT
CITY OF ORANGE, CALIFORNIA

KWC ENGINEERS

50' 0 50' 100'
SCALE IN FEET

PHASE 2 SITE CONDITION ENVIROMENTAL EXHIBIT

KWC ENGINEERS

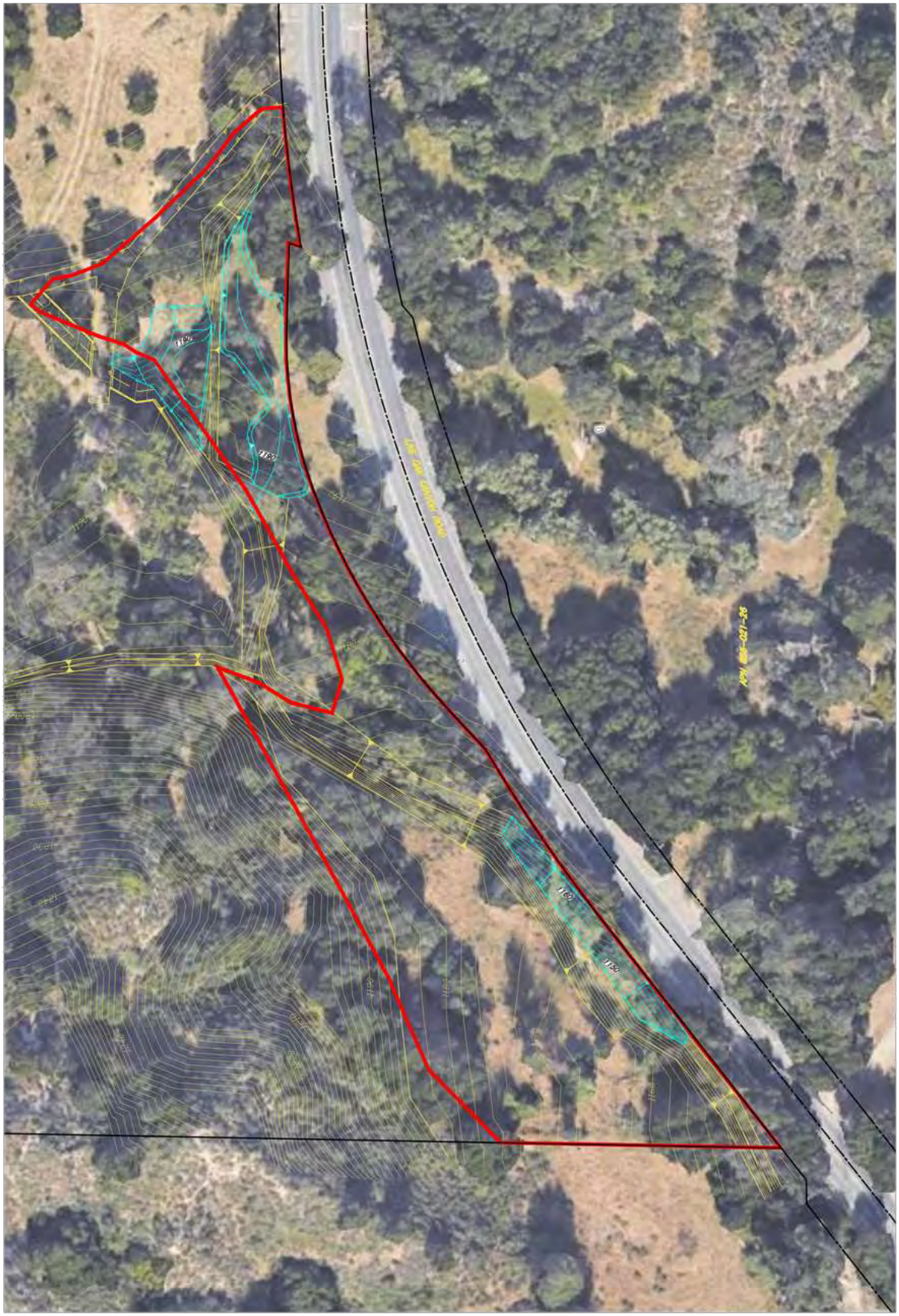
N

100' 0 100' 200'
SCALE: IN FEET

SHEET 1 OF 3

SADDLE CREEK
GRADING EXHIBIT
ENCINO CANYON, CALIFORNIA

KWC ENGINEERS



LEGEND:

- OC RECLAMATION POLYGONS
- EXISTING TOPOGRAPHY
- PROPOSED TOPOGRAPHY

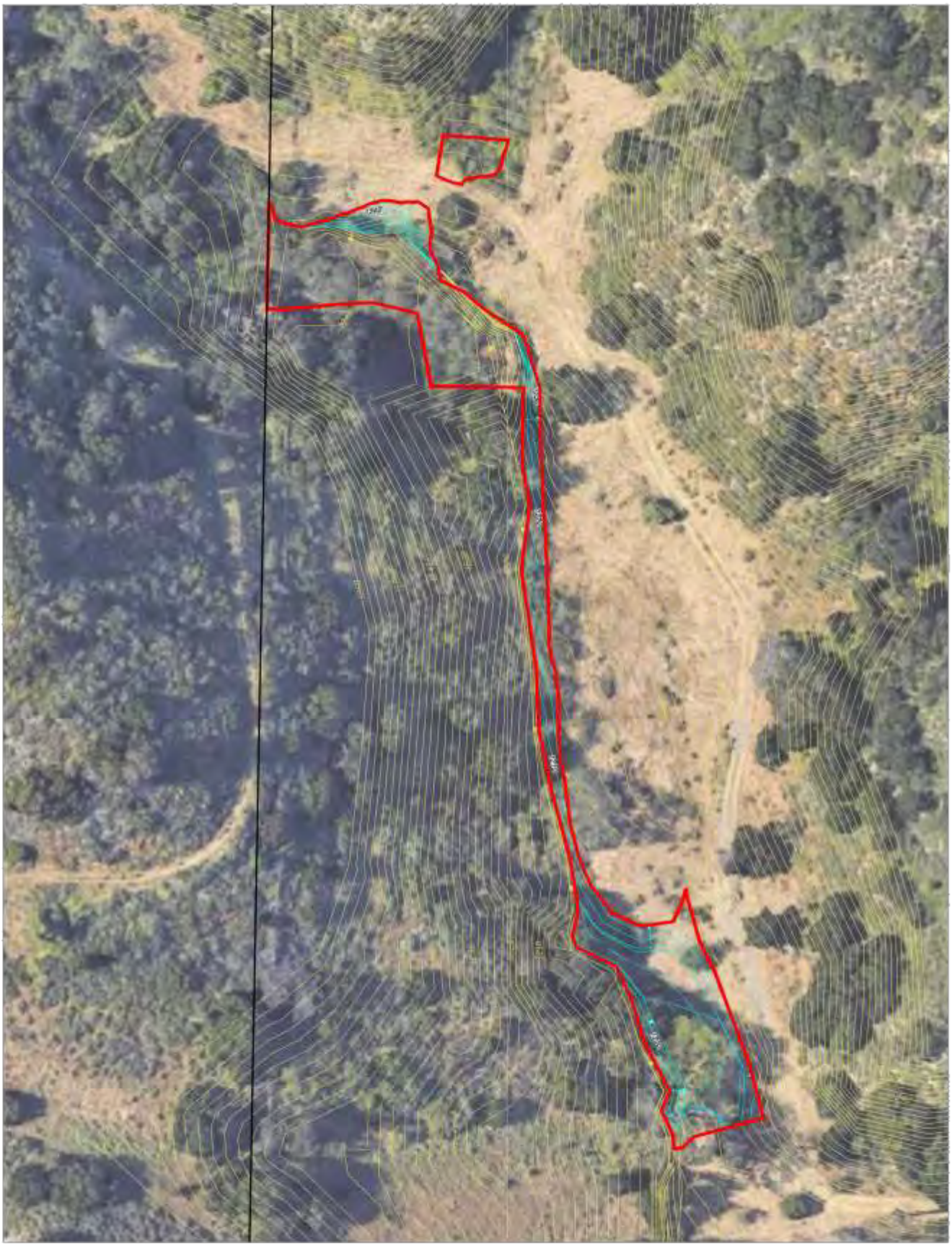
N

30' 0 30' 60'
SCALE IN FEET

SHEET 2 OF 3

SADDLE CREEK
GRADING EXHIBIT
VENTURA COUNTY, CALIFORNIA

KWC ENGINEERS



LEGEND:

- DC REGLAMATION POLYGONS
- EXISTING TOPOGRAPHY
- PROPOSED TOPOGRAPHY

SCALE IN FEET

SADDLE CREEK GRADING EXHIBIT

TRABUCO CANYON, CALIFORNIA

KWC ENGINEERS

Pacific BioScience, Inc.

LEGEND

- Project Site
- Enhanced (willow thickets/mulefat scrub)
- Enhanced (LBV transitional foraging habitat)
- Created Riparian
- Developed

0 25 50 100 150 200 Feet

FIGURE 5

OC Reclamation

Enhancement/Creation Areas

Pacific BioScience, Inc.

LEGEND

Enhanced (willow thickets/mulefat scrub)

Enhanced (LBV transitional foraging habitat

Not a Part (NAP)

Mitigation Site

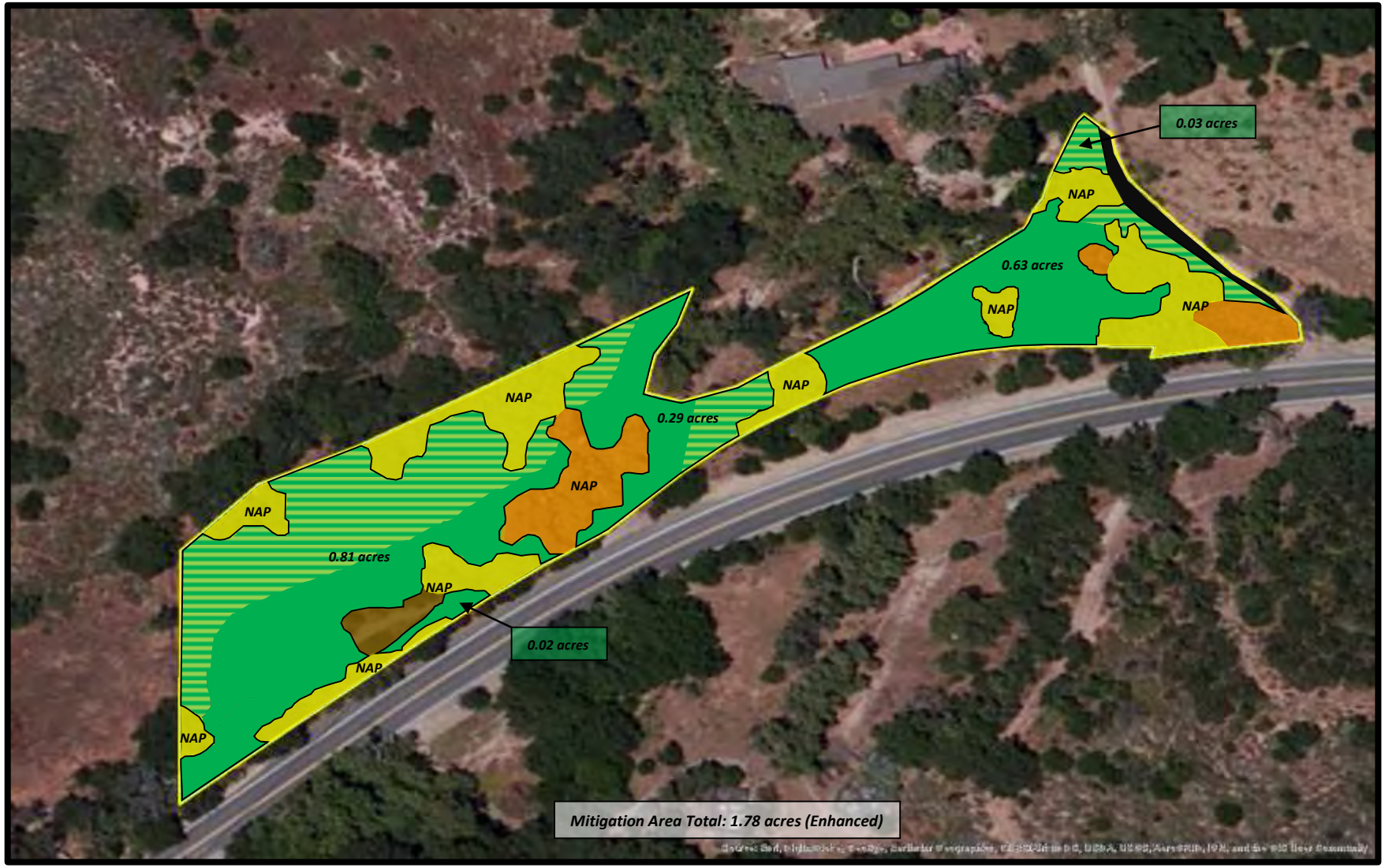
Oak Woodland

Mulefat Scrub

0 25 50 100 150 200 Feet

FIGURE 6

Mitigation Site (1 of 2)
Saddle Creek



Pacific BioScience, Inc.

LEGEND

FIGURE 7

Enhanced (willow thickets/mulefat scrub)

Enhanced (LBV transitional foraging habitat)

Not a Part (NAP)

Mitigation Site

Oak Woodland

California Sycamore Woodland

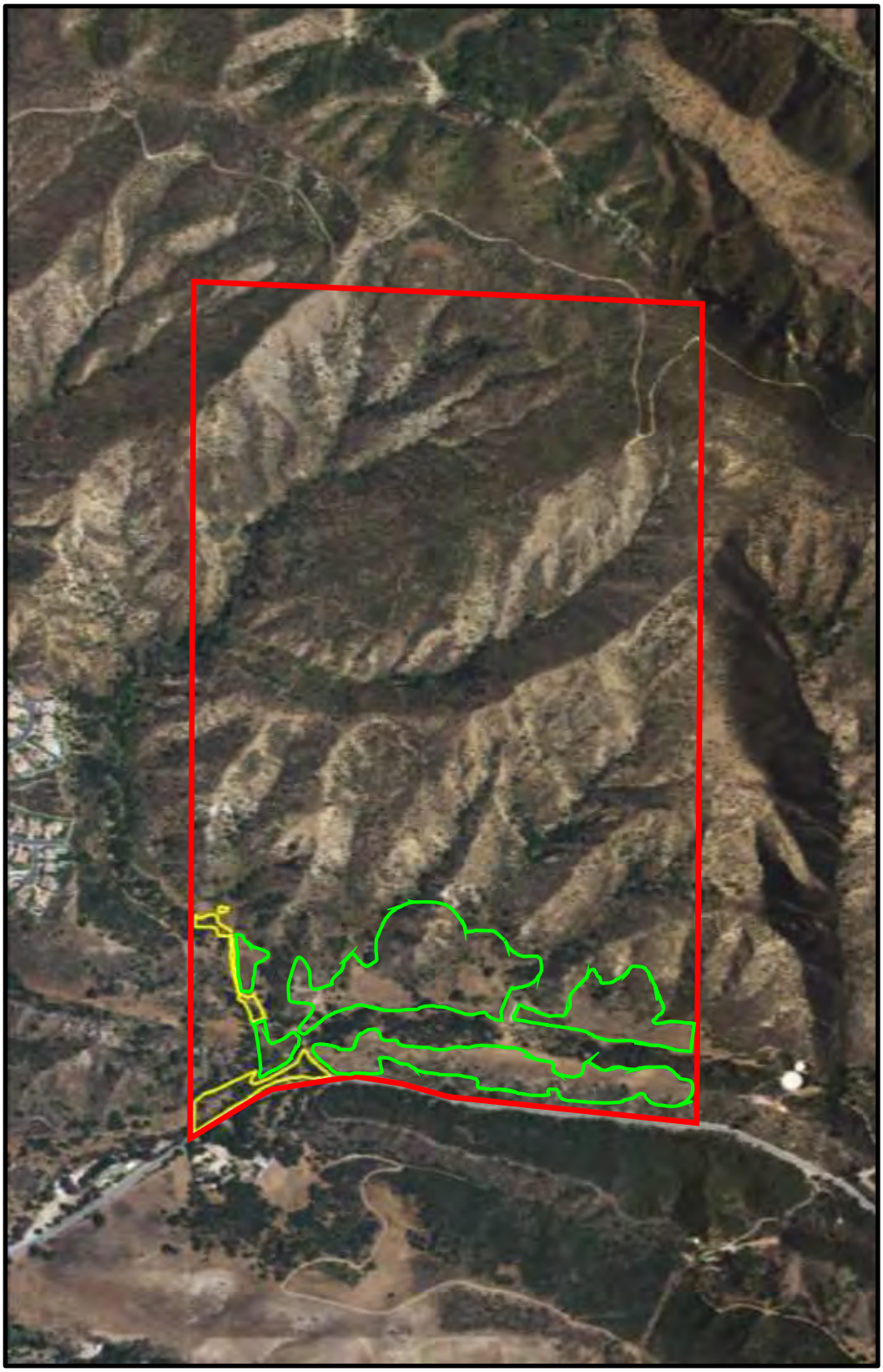
Mulefat Scrub

Developed

0 25 50 100 150 200 Feet

Mitigation Site (2 of 2)

Saddle Creek



Pacific BioScience, Inc.

LEGEND

- Saddle Creek North Preserve
- OC Reclamation Off-site Mitigation
- Non-OC Reclamation Enhancement

0 250 500 1,000 1,500 2,000 Feet

FIGURE 8

Mitigation/Enhancement Areas
Saddle Creek North

Pacific BioScience, Inc.

OC RECLAMATION

HABITAT MITIGATION MONITORING PLAN
PART I – ONSITE ENHANCEMENT

October 2018
Revised September 2021

Prepared for:

OC Reclamation
17392 Daimler Street
Irvine, California 92614

*

Prepared by:

Pacific BioScience, Inc.
156 Woodburne
Newport Beach, California 92660

Habitat Mitigation Monitoring Plan

for

OC Reclamation

September 2021
(Revised)

Prepared By: _____ Date: 9/27/21

Jeff Johnson
Principal Biologist
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Habitat Mitigation Monitoring Plan

for

OC Reclamation

October 2018

Prepared By: _____ Date: 10/5/18

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Table of Contents

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List of Tables

1.0 INTRODUCTION

This habitat mitigation and monitoring plan (HMMP) details onsite enhancement and habitat creation as partial mitigation for impacts to two acres of occupied least Bell's vireo habitat, and one acre of wetland of the state. A separate HMMP (Part II – Offsite Enhancement) was prepared for offsite enhancement to complete the requirements set forth in the associated Low-Effect Habitat Conservation Plan (March 2018) accepted by U.S. Fish & Wildlife Service (Service) and an incidental take permit to be issued by same.

The purpose of the HMMP is to create and/or enhance the native vegetation and wildlife habitats on site as mitigation for project impacts. This plan is a blueprint of the measures to be taken to achieve the project's goals. This HMMP addresses the following issues:

- Habitat enhancement and performance criteria by which replanting success is measured;
- Stream channel and creek flow modifications to ensure enhancement success;
- A planting plan, including an irrigation plan;
- An exotic vegetation management plan;
- Methods to protect the plantings until established;
- A contingency plan in the event performance criteria are not met;
- Within the riparian habitat and adjacent transition areas, habitat will be enhanced through eradication of invasive non-native plants and the planting of native species;
- Only indigenous native plants to be installed in the plan area; and
- Procurement of native seed, cuttings or container plants will be obtained from known sources in the watershed. If however, insufficient seed/plant sources are available or of poor quality, the procurement area can be expanded with agreement by the resource agencies.

This report identifies the protocol to be used to implement the Plan, which incorporates the above requirements. This plan covers 3.36 acres of open space area(s), which incorporates the creek and adjacent transitional areas. There are five aspects of this plan: (1) eradication of exotic plant species; (2) planting native species; (3) site hydrology/irrigation; (4) maintenance; and (5) monitoring to ensure that the Plan's goals are achieved. As mentioned previously, the goals are to replace non-native plant species with native species and to create a self-sustaining native vegetation cover that will enhance wildlife habitat values on the site. In addition, this plan will create an open space area that is visually pleasing to adjacent residents. The maintenance and monitoring program identified herein will determine the immediate and long-term success of the plan.

1.1 Responsible Party

OC Reclamation is responsible for implementing mitigation for the proposed project (Project), including measures identified in the HMMP.

1.2 Project Description

The Project proposes to fill and grade an abandoned pit mine located in the City of Orange. Mining operations stopped in the 1960's. Although the entire project site has been disturbed from past mining operations, natural plant communities now occur in some areas.

Over a five-year period, the Project would fill the exposed mine pit and grade to level most of the surrounding area within the property limits. The southern slope of Santiago Creek at the northern boundary of the property would be re-contoured to allow for widening the creek and an earthen berm would be created separating Santiago Creek from the balance of the site.

As stated, there will be on-site and off-site mitigation required to offset impacts resulting from implementing the proposed project. Onsite mitigation includes creation of riparian habitat along Santiago Creek by expanding an existing bench just above water line and enhancing the remainder of the creek's plant community within the project limits. Offsite mitigation will be conducted at a site known as Saddle creek approximately 10 miles southeast of the project site. Mitigation there will include creation of transitional riparian/upland plant community and enhancing existing habitat by removing non-native plants.

1.3 Hydrology

The Project is within a semi-arid region, and therefore there is little natural perennial surface water. As a result of the variability of rainfall, particularly over the past several years of drought conditions, surface hydrology is limited only to the perennial flow within Santiago Creek and an ephemeral wash created by road surface runoff leading into the mined pit, flowing only during storm events.

Hydrologic regime for the area follows the general Mediterranean climate, with cool, wet winters and warm, dry summers, but is also occasionally influenced by summer monsoons. The average rainfall for the project site is approximately 13 inches annually with most of the rainfall occurring December to March.

1.4 Vegetation

The project site is generally undeveloped with remnants of an historic mining pit. Because the mining operation ceased many years ago, vegetation has grown and now surrounds the mining area. As such, vegetation occurring on the site today is highly disturbed, non-native plants and patchy regrowth areas of native plants. Plant communities include disturbed, eucalyptus semi-natural woodland stands, disturbed black willow thickets, disturbed California sagebrush, and developed. A description of the existing plant communities on-site are below.

Disturbed

Disturbed areas include those that have been physically disturbed and are no longer recognizable as a native or naturalized vegetation association, but continue to retain a soil substrate. Typically vegetation, if present, is nearly exclusively composed of non-native plant species such as ornamentals or ruderal exotic species that thrive in disturbed areas. Examples of disturbed land include areas that have been graded, repeatedly cleared for fuel management purposes and/or experienced repeated use that prevents natural re-vegetation (i.e., dirt parking lots, trails that have been present for several decades), recently graded firebreaks, graded construction pads, construction staging areas, off-road vehicle trails, and old home-sites. Species observed in this plant community include: prickly Russian thistle (*Salsola kali*), telegraph weed (*Heterotheca grandiflora*), sow thistle (*Sonchus oleraceus*), common horseweed (*Conyza canadensis*), summer mustard (*Hirschfeldia incana*), and a sub-dominance of non-native grasses. This land cover typically occurs in areas with regular clearing and grading or poor soils such as along the pit slopes and access roads.

Eucalyptus Semi-natural Woodland Stands

At least nine species of Eucalyptus species occur in California. The genus is native to Australia. It has yellowish-white flowers, narrow, lanceolate leaves and shredding bark in irregular strips. Widespread commercial plantings occurred after 1870 and in the late 1900's for lumber and firewood. Seedlings aggressively invade neighboring areas. Understories in groves of these fast-growing long-lived trees are usually depauperate. A buildup of allelopathic chemicals in the soil and high volumes of debris inhibit the establishment of other plants.

Disturbed *Salix gooddingii* Woodland Alliance (Black Willow Thickets)

Disturbed black willow thickets are characterized as areas permanently or periodically inundated by water that have been significantly modified by human activity. Disturbed black willow thickets include portions of riparian habitat with an element of non-native species such as tamarisk (*Tamarix* spp.), but include native species such as: mule fat (*Baccharis salicifolia*), and cattails (*Typha* spp.).
Within the project site, this habitat was observed in the base of the pit and along the northern boundary bordering Santiago Creek. This habitat type observed on site was dominated by willows with some mule fat intermixed along the upland areas and cattails in the low-lying areas. The Santa Ana Regional Water Quality Control Board One determined one acre of this plant community is wetland of the state.

Disturbed California Sagebrush

California sagebrush scrub is a series of habitat classification that include areas of fairly open cover dominated by California sagebrush (*Artemisia californica*) and intermittent California buckwheat (*Erigonum fasciculatum*) and sage (*Salvia* spp.). Classifications vary by geographic location; however, species composition is typically similar. California sagebrush is found in coastal regions of Southern California. It is typically found on upland sites such as steep slopes, with shallow and

rocky soils. Distribution includes along the coastal base of the Transverse and Peninsular ranges from central Los Angeles County south to beyond the Mexican border.

The California sagebrush habitat within the project site is found along the northern and eastern portion of the site. The presence of non-native vegetation interspersed indicates significant disturbances in the past. As such, it is classified as low quality California sagebrush habitat with intermixed non-native grasses.

Developed

Developed land cover is classified as areas that have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported and retains no soil substrate. Developed land is characterized by permanent or semi-permanent structures, pavement, or hardscape, and landscaped areas that often require irrigation. Areas where no natural land is evident because a large amount of debris or other materials have been placed upon it may also be considered developed (e.g., car recycling plant, quarry). Characteristic vegetation includes unvegetated or landscaped with a variety of ornamental (usually non-native) plants. Developed areas within the project limits are the access roads and existing structures.

1.5 Soils

The project site is mapped as containing four soil series. A soil series is a group of soils with similar profiles. These profiles include major horizons with similar thickness, arrangement, and other important characteristics. These four soils series are:

> **168 – Modjeska gravelly loam, 0 to 2 percent slopes**: consists of deep, well-drained soils formed in mixed alluvium. Found on the coastal plain of southern California at elevations of 200 to 1,500 feet and often cultivated. Typically a grayish-brown or brown gravelly loam or gravelly fine sandy loam with less than one percent organic matter (Soil Survey Staff 2015).
>
> **185-Pits**: consists of open excavations from which soil and underlying material, mostly sand and gravel, have been removed for construction. Present land use is construction material, idle land, or ground water recharge if these areas are in a streambed (Soil Survey Staff 2015).
>
> **194-San Emigdio fine sandy loam, 0 to 2 percent slopes**: consists of very deep, well-drained soils that formed in dominantly sedimentary alluvium. Found on fans, floodplains, and narrow valleys at elevations of 100 to 2,000 feet and often historically cultivated or grassland. Typically a light- brownish gray fine sandy loam with many very fine roots throughout (Soil Survey Staff 2015).

197-Soboba gravelly loamy sand, 0 to 5 percent slopes: consists of deep, excessively drained soils that formed in alluvium from predominantly granitic rock sources. Found on alluvial fans and floodplains at elevations of 25 to 3,700 feet and historically annual grass pasture. Typically a grayish brown stony loamy sand that is loose and very friable with many fine roots and interstitial pores (Soil Survey Staff 2015).

2.0 QUALIFICATIONS OF ENHANCEMENT PERSONNEL

The project biologist will be responsible for the supervising all aspects of the enhancement and habitat creation from site preparation to maintenance, monitoring and ultimately agency signoff. The project biologist must have at least three years of experience in dealing with native habitat enhancement along the southern coast of California. The biologist also shall be familiar with all native plant species to be installed on the project site as well as the sensitive species, which may occur.

The enhancement contractor will be responsible for the proper installation and maintenance of the enhancement areas. The contractor will have a working knowledge of the existing habitats on site, and will be familiar with all of the native plant species to be installed. The enhancement contractor, as with the project biologist, shall have at least three years of experience in dealing with native habitat enhancement along California's southern coast. A separate contractor maybe used for initial site preparation/installation and maintenance; however, we recommend that the same company complete all of the work. Regardless of the number of contractors used to complete the project, all must satisfy the above prerequisites.

3.0 WEED ERADICATION

One of the main goals for the open space areas is to remove introduced, weedy species from the preserved areas and to encourage the growth and establishment of a native plant cover. The term "weed" is variously defined in the literature. For the purposes of this project, we consider a weed to be an alien plant species that is introduced as a result of human activities or disturbances and becomes established to the detriment of native plant species. Special-status species appear to be particularly vulnerable to the changes created by non-native, weedy invaders, which is why weed control must be part of all enhancement projects.

Although there are patches of native plants on the site, much of the site is dominated by introduced grasses, forbs, shrubs, and eucalyptus trees, which will generally out-compete and replace native species if action is not taken to eradicate or control them. In order to create a self-sustaining cover of native plant species, competition from introduced species must be reduced. Methods of weed management may differ

between the creek and transitional zones in both technique and intensity. The goal of weed management is not to eliminate all weeds from the site, which would be very difficult or impossible, but rather to control weeds to the point that native plant communities can become established, be self-sustaining, and persist.

3.1 Pre-Project Eradication

Prior to planting and seeding activities, it is necessary to remove as much of the exotic (non-native) plant material from the enhancement areas as possible. The non-native plant cover will be removed, including the introduced, weedy species in the transitional areas. This will allow the native plantings to become established without having to compete with exotic plants for resources. Weed management can occur in a number of ways, including chemically through the use of herbicides, mechanically through the use of mowing equipment, or by hand clearing. In addition, non-native trees will be removed from the site with as little damage to existing native plants as possible. Due to the disturbed nature of the site and the large number of introduced weed seeds in the upper layers of the soil, topsoil does not need to be salvaged, but it is suggested.

Weed removal will be pursued aggressively. Irrigation will be installed around the perimeter of the planting and seeded area. The irrigation system will be activated for three consecutive days at one hour per day. This will allow the weed seeds in the soil to germinate. The new immature weed cover will be treated with appropriate herbicide prior flowering and seed production. In areas where there are dense patches of weeds, herbicide will be applied, and the dead weeds will be removed. In areas where weeds are sparse, removal of dead weeds is unnecessary. This "grow-kill" process of watering and herbicide applications will be completed at least two additional times for a total of three.

Weed eradication in the creek area will be mostly by hand removal. Noxious weeds, such as Harding grass, milk thistle [*Silybum marianum*], smilo grass, and fennel will be targeted for aggressive eradication. Mechanical removal and herbicide application may be used in cases where hand weeding is not effective, such as with the removal of Bermuda grass. Any weeding, other than by hand, in creek areas must be approved by the project biologist and follow California Department of Pesticides Regulation certified Pest Control Advisor (PCA) recommendations for herbicide application.

<u>Chemical Removal</u>

Because the enhancement area includes portions of a creek, herbicide use will be restricted and used only under the conditions listed below. All herbicide and pesticide use will be in conformance with the manufacturers recommendations. The use of herbicides will be prohibited when:

- Wind speeds exceed 5 m.p.h.;

- Rainfall has occurred or is expected to occur within the following 48 hours; and/or
- Standing or flowing water exists in immediate area identified for eradication

Other limitations and regulations regarding herbicide use include the following:

- Only herbicides approved for aquatic areas will be used (glyphosate-based chemicals such as Rodeo™);
- A backpack or hand held sprayer with a nozzle adjustment would be used to adequately control the direction of the spray;
- Colored dye will be added to the herbicide to easily identify spray location;
- No native plants will be targeted;
- Treated plants will not be disturbed until the herbicide has had adequate opportunity to take effect (two to four weeks); and
- Removal activities will be monitored in the schedule identified herein, with further removal activities to be conducted in accordance with this schedule.

If surfactants are required, they will be restricted to non-ionic chemicals (such as Agri-Dex), which are approved for aquatic use. Herbicides will be applied as recommended by a PCA and according to manufacturer's label recommendation. Pesticides will be applied under the direction of a licensed pest control applicator (i.e., a person holding a Qualified Applicator's License and Certificate). Herbicides will be utilized in accordance with the schedule identified below. Both herbicides and pesticides will be applied only after consultation with the project biologist.

Hand Removal

If the use of herbicides cannot occur in accordance with the provisions identified above, removal activities will occur by hand. Vegetation removed from the site will not be stockpiled in the open space areas overnight.

Mechanical Removal

Mechanical removal of non-native weeds will occur on a limited basis in the enhancement area. The goal of mechanical removal is to remove the weedy cover, thatch, and seed pool from large areas that are inaccessible to scraping during initial weed eradication.

Mechanical removal will consist of using a line trimmer or brush mower to cut weedy grass and forb species. Mechanical cutting will always be accompanied by hand raking and removal of cut material. A chain saw will be used as necessary for the removal of identified non-native trees. Care will be taken to avoid all native plant species to the extent practicable when using mechanical means.

4.0 PLANTING AND SEEDING

The planting and seeding will occur as generally described in the HCP. A more detailed narrative description of planting and seeding in the project area, as well as plant and seed procurement, is provided below.

4.1 Enhancement Areas

Two distinct areas subject to enhancement efforts are: 1) willow thicket mulefat scrub; and 2) LBV transitional foraging habitat.

4.1.1 Willow Thicket/Mulefat Scrub

Enhancement will consist primarily of removing the exotic plant species and planting with native species indigenous to the area. The species diversity of the thicket scrub areas will be enhanced by planting indigenous species known to occur in nearby similar habitat areas, such as the species listed in Table l. This list is not intended to be restrictive. Other plants can be used providing they are native to the area and are typically found within a willow thicket or mulefat scrub community.

Success of plantings rests in the ability to understand site conditions such as soil, topography, water availability, and sun; and then predict which plant communities and plants will thrive naturally. This can be challenging, so it is important to maintain flexibility. This Plan outlines areas of plantings, but won't identify specific locations of individual plants. It is intended that individual plants will be installed, then evaluated periodically for success or failure. Adjustments shall be made accordingly.

Container size for each species can vary depending on appropriateness for the species and availability. Generally, one-gallon size plants are best because of their ability to adapt, although smaller or larger can be used. Cuttings of willows can be used from nearby plants.

Table 1: Plant Palette for Enhanced (Willow Thicket/Mulefat Scrub)

Species	Container Size for Planting (gallon)	Plant Spacing (on-center spacing in feet)
Arroyo willow (*Salix lasiolepis*)	1 or cuttings	5-20
Black willow (*Salix nigra*)	1 or cuttings	5-20
Cottonwood (*Populus fremontii*)	15	20
Gooding's willow (*Salix gooddingii*)	1 or cuttings	5-20
Mulefat (*Baccharis salicifolia*)	1	8-10
Red willow (*Salix laevigata*)	1 or cuttings	5-20
Sycamore (*Platanus racemosa*)	15	20

Following site preparation, irrigation will be installed around the perimeter of the site, and container plants will be installed.

4.1.2 LBV Transitional Foraging Habitat

This enhancement area will be addressed similarly to willow thicket mulefat scrub with the removal of exotic plant species and planting with native species indigenous to the area. The species diversity of the transitional foraging areas will also be enhanced by planting indigenous species known to occur in nearby similar habitat areas, such as the species listed in Table 2 and Table 3. Again, this list is not intended to be restrictive and adjustments to the plant palette can be made as needed. Generally, one-gallon size plants are best because of their ability to adapt. Seeds should be collected from plants occurring on site. However, due to the limited size and seed sources on site, collected seed may be supplemented with purchased seed. Purchased seed must come from a reputable seed supplier (such as but not limited to S&S Seeds) and must have been collected locally from the designated region near the site. Seeds should be collected from the site prior to ground disturbance throughout the year; however the period between January and September (depending on the species, amount of rainfall, and temperature) should be the best times to collect seeds. Because seed production varies among species and from year to year, a botanist or other qualified individual should make monthly collecting visits. The goal is to collect the maximum amount of seed at full maturity.

Table 2: Plant Palette for Enhanced (LBV Transitional Foraging Habitat)

Container Plants		
Species	**Container Size for Planting (gallon)**	**Plant Spacing (on-center spacing in feet)**
Black elderberry (*Sambucus nigra*)	15	15
California fan palm (*Washingtonia filifera*)	10	15
California rose (*Rosa californica*)	1	8-10
Coyote brush (*Baccharis pilularis*)	1	8-10
Deergrass (*Muhlenbergia rigens*)	1	8-10
Giant wild rye (*Elymus condensatus*)	1	8-10
Mulefat (*Baccharis salicifolia*)	1	8-10

Table 3: Seed Mix for Enhanced (LBV Transitional Foraging Habitat)

Seed Mix	
Species	**Lbs/Acre**
Blue eyed grass (*Sisyrinchium bellum*)	2
California bee plant (*Scrophularia californica*)	2
Caterpillar phacelia (*Phacelia cicutaria*)	2
Coast range melic (*Melica imperfecta*)	2
Douglas' nightshade (*Solanum douglasii*)	2
Fiddleneck (*Amsinckia menziesii*)	2
Ladies' tobacco (*Pseudognaphalium californicum*)	2
Lupine (*Lupinus bicolor*)	2
Ragweed (*Ambrosia psilostachya*)	2
Small fescue (*Vulpia microstachys*)	2
Wild canterbury bells (*Phacelia minor*)	2

4.2 Created Riparian Area

The created riparian area is similar to the plant composition of the enhanced LBV transitional foraging habitat, however, there will be a greater emphasis on willow cuttings with adjacent mulefat along the edges as this most closely represents the plant community existing on site. The created bench will mimic the existing characteristics of Santiago Creek and the willow and mulefat plantings will benefit from the consistent water that the creek provides. The plant palette for the created riparian area is presented in Table 4 below. Willow cuttings will be installed abundantly throughout the created riparian area and one-gallon container size mulefat plants will be installed at the higher elevations.

Table 4: Plant Palette for Created Riparian

Species	Container Size for Planting (gallon)	Plant Spacing (on-center spacing in feet)
Arroyo willow (*Salix lasiolepis*)	1 or cuttings	5-20
Black willow (*Salix nigra*)	1 or cuttings	5-20
Gooding's willow (*Salix gooddingii*)	1 or cuttings	5-20
Mulefat (*Baccharis salicifolia*)	1	8-10
Red willow (*Salix laevigata*)	1 or cuttings	5-20

4.3 Wetland Waters of the State

Excavation of two shallow ponds will occur adjacent to Santiago Creek at the base of the southern slope, but above the high-water mark of the creek. This area will be planted around the perimeter of the ponds similar to Created Riparian Area with willow species, except without mulefat. One or more of these willow species may be planted onsite, provided at least black willow, as this species is found currently onsite. See Table 4 Plant Palette for Created Riparian above for willow species, container size, and spacing.

4.4 Planting Techniques

Container stock plants will be installed in the enhancement and created areas. The recommended plant palette is presented in the tables above; however, other suitable native, indigenous plant species may be added as recommended by the consulting biologist. Prior to plant installation, untreated jute netting will be installed on the banks of the channel to reduce sediment erosion. In areas where jute netting has been installed, openings will be created to allow container stock plant installation. If site conditions warrant, gopher baskets will be placed around shrub and tree plantings.

Fertilizers will only be used in extraordinary situation with approval from the project biologist. All plantings will be placed in a randomly spaced natural pattern. The average planting densities will be determined based on the center spacing criteria specified in Tables 1, 2 and 4.

Methods to Protect Plantings Until Established

In areas where the project biologist determines that burrowing animals (e.g., gophers, squirrels, etc.) may affect plantings, chicken wire or gopher cages will be placed around the rootball, including the bottom. Cages will be placed a sufficient distance away from the rootball so as not to impede growth and will use a wire mesh no larger than 0.5 inch. Similar techniques would also be used on trees. In order to protect plantings from grazing herbivores, above-ground cages, approximately two to three feet tall will be anchored to the ground in such a way that animals cannot gain access to the plants. Fencing or caging will be conducted under the direction of the project biologist and their use would be based on the severity of damage to plantings. Some damage or use is expected as the plants will be providing some wildlife habitat enhancements.

5.0 SITE HYDROLOGY/IRRIGATION

Santiago Creek is perennial with flow varying during the year, but limited to approximately 6,000 acre-feet per hour during high flow by an upstream dam. The excavated bench along the creek will be at an elevation relative to the creek for the plants to reach once mature. See Appendix A - Figures for the grading plan. In

addition to the creek, the natural slope of the site and immediate vicinity allows for rainfall and nuisance water to flow into channels that will enter the excavated bench, helping irrigate long term. Through proper design practices consisting of creation of a bench, permanent on-site drainage channels, and temporary irrigation as discussed below, the plan's goal is to enhance and establish drainage conditions as much as possible so that riparian habitat conditions can be created along the creek.

5.1 Temporary Irrigation

A temporary overhead irrigation system will be installed to ensure that the enhancement plantings and created areas are able to become established. See Appendix A – Figures for suggested design of this system. Irrigation will occur when natural moisture conditions are inadequate to ensure survival of plants. Irrigation will be phased out through the spring/summer of the third year unless the project biologist determines that current conditions threaten survival of the plantings. For the enhancement effort to be considered successful, native plantings must survive and grow for at least two years without supplemental water.

6.0 MAINTENANCE

Following completion of initial grading, the project biologist will train the maintenance crew and supervise maintenance of the enhancement and creation program. This will guarantee that the site receives quality maintenance and that the crew will be able to properly distinguish introduced from native plant species. The maintenance workers will be provided a complete list of plants found on the site (with color photographs). Maintenance will occur for a period of five years, after which the project will be evaluated per for success. If the project does not meet the performance criteria, maintenance will continue until met.

Maintenance activities will consist primarily of weeding, irrigation repair, and plant and seed replacement. The success of the enhancement will rely heavily on the ability of the maintenance personnel to keep weeds out of the enhancement areas. Removing the existing seed bank during initial weed removal will help limit natural weedy seed germination; however, the use of irrigation will encourage additional germination. Therefore, infrequent use of the irrigation and removal of germinating weed seeds will reduce weed growth significantly. The indigenous native seeds and container stock plantings used on the site will be drought tolerant and adapted to the natural rainfall patterns on site. These plants should readily become established; however, container stock plants that do not survive will be replaced in kind, and seeded areas will be reseeded as necessary following installation. Final decisions regarding planting and reseeding will be the responsibility of the project biologist.

6.1 Exotic Vegetation Management

Weeds will be removed initially as described in Chapter 3. Scraping the topsoil/thatch in areas dominated by exotic grasses and forbs prior to project initiation will help to reduce weed cover in the long term by reducing the seed bank, although salvaging topsoil can also provide a benefit. If topsoil is removed, it must be replaced. During the maintenance period, weeds will be hand-removed by a crew trained and supervised by the project biologist. Weed removal will occur throughout the year but will take place more frequently during the winter and early spring when seed germination of introduced annuals is greatest. Following initial weed removal, the goal of the maintenance effort is to remove exotic weeds before they have set seed so that new seeds are not added to the seed bank. With continued maintenance, the goal is to eventually reduce weed cover to the point that maintenance is no longer necessary.

Some weed species will be very difficult if not impossible to eliminate from the site. Some of these are small annual grasses and forbs that have become naturalized in California's grasslands. These should not preclude native plant establishment on the site as they are often found growing with California native grasses in nature. Some tolerance will be given to these species. However, highly invasive noxious weed species will be specifically targeted for eradication. These exotic weeds will have a significant impact on the establishment of native plant species on site if they become established. These targeted, zero tolerance weedy species include Harding grass, smilo grass, giant reed [*Arundo donax*], pampas grass [*Cortaderia* spp.], sticky eupatorium [*Ageratina adenophora*], umbrella plant [Cyperus involucratus], fennel, Bermuda grass, bull thistle [*Cirsium vulgare*], star thistles [*Centaurea* spp.], Italian thistle, poison hemlock, fennel, kikuyu grass (*Pennisetum clandestinum*), periwinkle, Cape-ivy, and eucalyptus seedlings.

7.0 MONITORING AND PERFORMANCE ASSESSMENT

Regular monitoring of the enhancement area will allow the progress of the enhancement effort to be assessed and adjusted to ensure success. In order to determine the success of the enhancement effort, performance criteria have been established. In addition, a contingency plan has been created in the event that the performance criteria are not met.

7.1 Monitoring Scheduling and Procedures

The enhancement and created areas will be monitored on a regular basis to determine the success of the program. Monitoring will also provide the maintenance personnel with recommendations and make sure goals are being met. Monitoring will be conducted by a qualified botanist familiar with the local flora and vegetation

and with experience in native habitat enhancement. Maintenance monitoring will consist of carefully examining the enhancement areas on foot, collecting photo documentation from established points, and evaluating the progress of the project. After each visit, the project biologist will write a short report summarizing findings and identifying any maintenance actions that need to occur. The monitoring reports will be sent to the project owner and the maintenance personnel. Maintenance needs identified in the reports will be completed before the next scheduled maintenance event. The biological monitoring schedule is presented in Table 5. However, if the project biologist determines that more frequent visits are needed, the schedule below can be modified to ensure the goals of the plan are met.

The project biologist will quantitatively sample the vegetation in the enhancement areas each year and provide annual technical reports summarizing the results of these investigations. Annual vegetation sampling will occur from April to July and will coincide with the flowering period and annual peak plant growth in the enhancement areas.

Pre-project and monitoring surveys will include sampling the vegetation following the California Native Plant Society (CNPS) protocol using the point intercept (line transect) and belt transect sampling methods. Photographic documentation of each transect and other representative views of the enhancement project will also be included. The following is a synopsis of the CNPS protocol: line transects include vegetation data collected along a line transect with no width. A belt transect collected date along a transect line with width (total of 5 m wide). Both, if employed correctly, provide reliable vegetation data.

Permanent transects will be established in each of the enhancement and created riparian areas and GPS readings along the transect will be recorded. Six transects will be established in the enhancement and created riparian areas: two in the enhanced willow thicket/mulefat scrub area adjacent to Santiago Creek, two within the enhanced LBV transitional foraging habitat, and two within the created riparian area. Due to the small size of the site, transect lengths may have to be reduced from 50 m, as specified by CNPS. The two ends of each line transect will be marked with a three-foot rebar stake covered with white PVC pipe. Every 50 centimeters (cm) along a line transect (beginning at the 50 cm mark and ending at 25 m), a point will be projected into the vegetation. Each species intercepted by the point is recorded. Multiple species may intercept a single point; therefore, combined vegetation cover can exceed 100 percent. Vegetation layers are categorized into herb (less than 60 cm), shrub (60 to 300 cm) and tree (greater than 300 cm) strata. Percent cover of all species (native and non-native) will be calculated for each strata in the enhanced and created areas that are sampled. While performance criteria do not specify criteria by vegetation layer, evaluation of this data can help to evaluate the restoration and enhancement of the site. All species occurring within each transect will be recorded and the data used to determine species cover, density, frequency, and diversity. Photographic documentation of the site will be conducted by taking

one photograph of each enhancement area transect. Photographic points will be taken near each marker facing toward the opposite marker.

Species cover and diversity also will be evaluated through the use of the belt transect data. Establishment of plant species from the seed mix will be determined by comparing the species seeded with the species observed. All plant species observed that were not planted or seeded will be considered part of the natural recruitment on the site. Container stock plant establishment will not be determined with transect data. All installed native plants will be flagged at the time of planting, and dead individuals will be replaced every six months as needed. Plant replacement will be at the discretion of the project biologist and will be monitored during regular maintenance (Table 5) visits. Plant replacement will be based on the cover of native species rather than the number of surviving container stock because there may be cases where native cover is high and container stock survivorship is low. In this case, replacement of container stock is not necessary.

Table 5: Biological Monitoring Schedule

Biological Monitoring Schedule		
YEAR(S)	**FREQUENCY**	**NUMBER OF VISITS**
1 and 2	Every other month	6
3 and 4	Every other month December through May	5
5	Quarterly	4

7.2 Performance Criteria

Performance criteria will be evaluated annually for five years and compared to the established performance criteria shown on Table 6. If the performance criteria are not met during one of the monitoring periods, remedial actions will be taken to correct it. If the cover and diversity requirements are not met, replacement plantings will be made to achieve these requirements.

Table 6: Performance Criteria

Performance Criteria					
Year	**1**	**2**	**3**	**4**	**5**
Enhanced (Willow thicket/Mulefat Scrub)					
Percent Cover by Native Species (canopy)**	20	35	70	80	85*
Percent Cover by Weeds (canopy)	15	15	12	8	8
Species Richness	2	3	3	4	5
Enhanced (LBV Transitional Foraging Habitat)					
Percent Cover by Native Species (canopy)**	20	35	70	80	85*
Percent Cover by Weeds (canopy)	15	15	12	8	8

Species Richness	5	5	7	7	9
Created Riparian					
Percent Cover by Native Species (canopy)**	30	45	70	80	85*
Percent Cover by Weeds (canopy)	15	10	10	5	5
Species Richness	2	3	3	3	4
Wetland Waters of the State					
Percent Cover by Native Species (canopy)**	30	45	70	80	85*
Percent Cover by Weeds (canopy)	15	10	10	5	5
Species Richness	2	3	3	3	4

*Annual non-native grasses will not be considered when measuring success criteria as they are now ubiquitous in nature
**Areas of the site include a sandstone substrate and plants that do not grow in these areas should not be factored into the percent cover.

As described previously, qualitative and quantitative baseline vegetation data will be collected using the sampling transects established for monitoring and discussed previously. Changes in the vegetation will be evaluated and compared annually with the baseline data and with data collected the previous years. Each year's data will be compared to the established performance criteria for native and non-native plant cover. If the performance criteria are not meet for any year, remedial action will be taken to correct it. This data will be included in the annual reports and the final report.

7.3 Contingency Plan If Performance Criteria Are Not Met

The re-evaluation will review the appropriateness of the native species selected. If it is determined that changes are necessary, the plan will be modified to incorporate these changes and replanting undertaken. If final performance criteria are not met at the end of year five and it is determined those success criteria are still attainable, maintenance and monitoring will continue.

7.4 Monitoring Report

In accordance with this plan for documenting and reporting the physical and biological "as built" condition of the site will be prepared within 30 days of completion of the initial restoration activities. The report will describe the field implementation of the approved restoration program in narrative and photographs, and report any problems in the implementation and their resolution.

The initial installation report and the annual report will be prepared by the project biologist and submitted to the resource agencies by January 1 of each year for five years after planting. The report will include the evaluation of the performance criteria, observations regarding the general health of the site, and any maintenance activities. Photos of the enhancement areas, copies of the monitoring reports, and collected data will be included in appendices as appropriate.

Enhancement Schedule

An enhancement schedule is proposed as a guide to determine appropriate milestones for the Plan's success. This schedule may be modified as appropriate after consultation with the appropriate agencies. Maintenance will occur per Table 5, and initial weed removal will begin in spring/summer. Installation of native plantings should occur in the fall, and the first annual data collection will occur in spring/summer of the following year. Remedial planting and seeding, if necessary, will occur for the first time in fall of the following year and will continue as needed. The final annual monitoring report will be submitted by January 1, five years after project initiation; however, the project may be completed earlier if final performance criteria are met.

8.0 ADAPATIVE MANAGEMENT

8.1 Responsible Party

The Applicant, OC Reclamation, will be responsible for implementing, maintaining and monitoring all adaptive management procedures.

8.2 Initiating Procedures

If during the 5-year monitoring period, a destructive natural occurrence damages at least 25% of the plantings, reconstruction of structures and replanting with monitoring shall occur.

If any performance standard is not met in any year, the Project Biologist will prepare an analysis of the cause of failure and propose remedial action for approval by the resource agencies. If the mitigation site has not met one or more of the success criteria, the responsible party's maintenance obligation shall continue until resource agencies give final approval.

8.3 Alternate Locations for Mitigation

Sufficient areas for enhancement and creation is available at the locations presented here so alternate locations are unnecessary.

8.4 Funding

The Applicant will provide the funding for planning, implementation, maintenance, and monitoring of all contingency measures that are required. Financial assurance will be provided in the form of bonding as established by the PAR.

9.0 LONG TERM MANAGEMENT

This section describes the long-term management program for enhancement and creation of habitat for the OC Reclamation project.

9.1 Responsible Party for Long-Term Management of the Mitigation

The responsibility for long-term management of the on-site mitigation area will be upon OC Reclamation. It is expected that OC Reclamation will contract and provide funding to Rivers and Lands Conservancy who will carry out an on-going maintenance and management program to ensure the long-term success of the mitigation site.

9.2 Long-term Financing Mechanism

Funding for the ongoing management activities within the mitigation site will be based on an estimate generated by a Property Analysis Record (PAR) or a PAR equivalent. A non-wasting endowment to ensure revenue is sufficient to operate management activities will be estimated by the PAR. Long-term management financing may also be established through a funding account.

9.3 Management Activities

Long-term management program shall include:

9.3.1 Site Inspection

The mitigation site shall be inspected annually by the monitoring entity to detect any significant degradation within the area and inspect for vandalism. Vandalism shall be reported to the Sheriff as appropriate.

9.3.2 Signage and Fencing

Signs, if present, will be inspected for degradation and replaced promptly by the monitor. Fencing and gates may require repair or replacement from time to time but shall not be installed in a manner that impedes wildlife movement.

9.3.3 Removal of Trash and Debris

The mitigation site shall be kept free of trash and debris. Trash and debris removal will occur annually between September 1st and February 15th to avoid impacts to nesting birds. Care shall be given to avoid impacting native plants. All dead limbs and tree fall shall be left in place.

9.3.4 Revegetation

Revegetation of plant species may become necessary from time to time.

9.3.5 Non-native Plant Species Removal

Non-native perennial plant species shall be removed from the mitigation site annually. This may require more than one visit during the growing season. Typically two or three visits timed appropriately according to plant maturity is necessary to remove plant material before they become reproductively mature.

10.0 FINANCIAL ASSURANCES

OC Reclamation is responsible for the costs for the mitigation site including costs of land acquisition, implementation of HMMP, monitoring during the 5 years, and long-term maintenance and remediation.

11.0 COMPLETION OF COMPENSATORY MITIGATION

11.1 Notice of Completion

The Applicant will notify the resource agencies in writing when the monitoring period is complete and success criteria are met. If the success criteria have been met at the end of the five-year monitoring period, the enhancement and creation will be considered successful. If not, the maintenance and monitoring program will be extended one year at a time and remedial measures that are approved by the resource agencies will be implemented. Only those areas that fail to meet the success criteria will require additional monitoring. This process will continue until the fifth year criteria are met or until the resource agencies agree that the mitigation has met its intended goals.

Final success criteria will not be considered to have been met until a minimum of two years after supplemental irrigation has ceased. Should the revegetation effort meet all goals prior to the end of the five-year monitoring period, the resource agencies, at their discretion, may terminate the monitoring effort and release the

bond. At that time, the Applicant will be released from further maintenance and monitoring requirements of the mitigation.

11.2 Agency Confirmation

Following receipt of the final annual monitoring report, the resource agencies will contact the Applicant as soon as possible to schedule a site visit to confirm the completion of the mitigation effort. The mitigation will be considered complete and successful with a site visit by the resource agencies and a written confirmation that success criteria were met.

It is critical that resource agency staff review annual reports and provide comment in a timely manner so deficiencies they note can be addressed immediately and prior to the end of the approved program.

12.0 REFERENCES

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[USACE 1986c] November 13, 1986. 33 CFR 328.3(e), 51 FR 41250.

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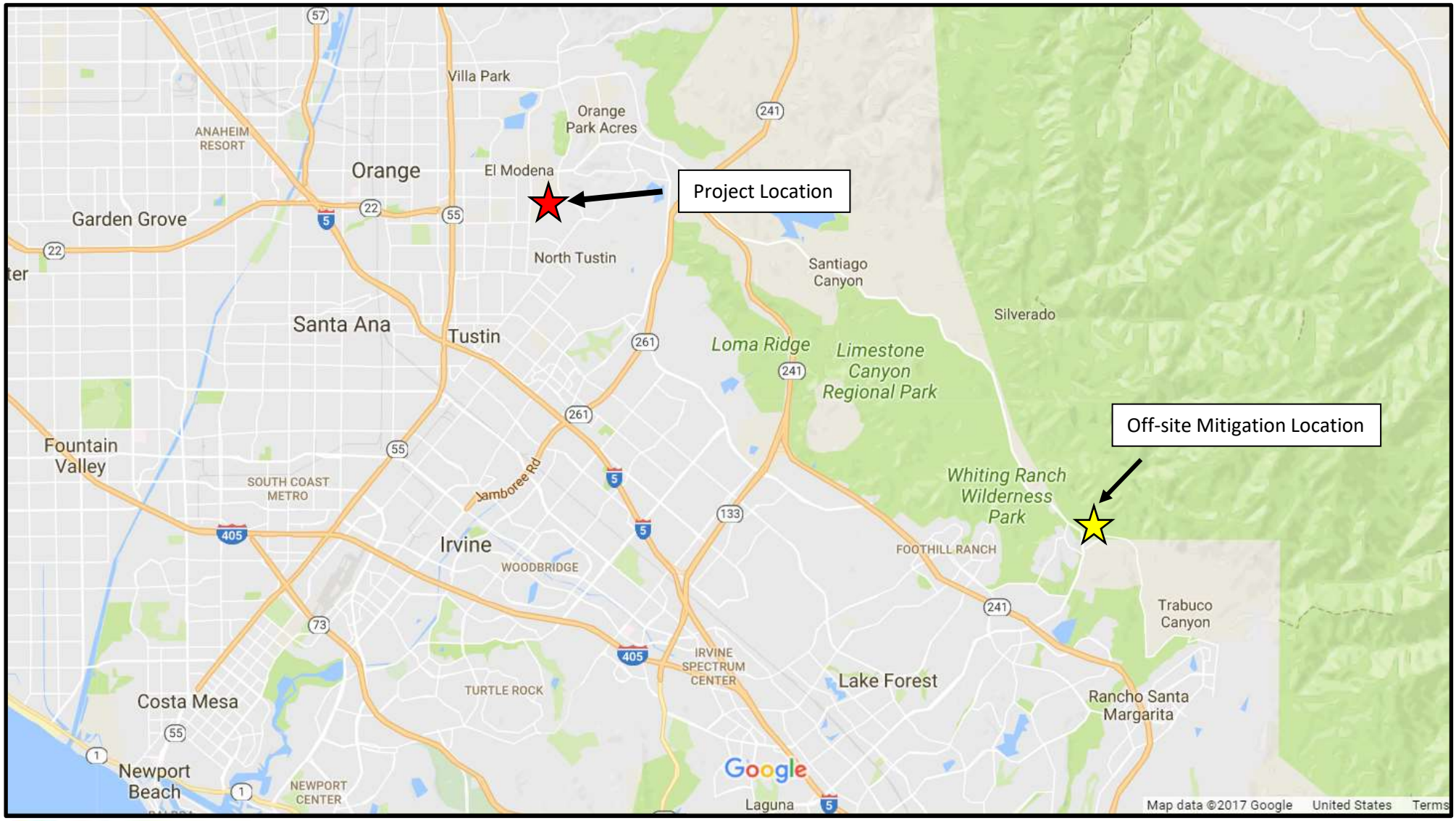
Aerial photography taken and provided by Trevor Wood of Chandler's Sand & Gravel, LLC

Appendix A: Figures



Pacific BioScience, Inc.

LEGEND

Project Site

Off-site Mitigation Location

FIGURE 1

Chandler's Orange Mine

Project/Mitigation Site Locations

Pacific BioScience, Inc.

N

0 175 350
FEET

LEGEND

Project Location

FIGURE 2

Chandler's Orange Mine
Project Location

50' 0 50' 100'

SCALE IN FEET

EXISTING SITE CONDITION ENVIROMENTAL EXHIBIT

CITY OF ORANGE, CALIFORNIA

KWC ENGINEERS
CIVIL ENGINEERING • PLANNING • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 • CORONA, CA. 92881-3370 • 951-734-2130

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E. STACEY LEE LANE

SANTIAGO CREEK

SANTIAGO CREEK

PHASE 1

N.A.P.

N. SANTIAGO BOULEVARD

CANYON STREET

E. SANTIAGO CANYON ROAD

50' 0 50' 100'

SCALE IN FEET

PHASE 1 SITE CONDITION ENVIROMENTAL EXHIBIT

CITY OF ORANGE, CALIFORNIA

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50' 0 50' 100'

SCALE IN FEET

PHASE 2 SITE CONDITION ENVIROMENTAL EXHIBIT

CITY OF ORANGE, CALIFORNIA

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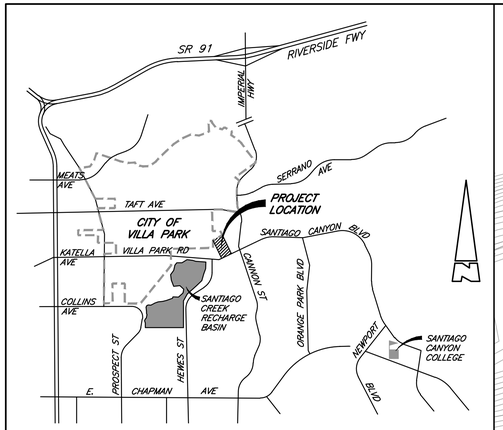
CITY OF ORANGE
WETLAND BASINS
CHANDLER'S SAND AND GRAVEL



VICINITY MAP
N.T.S.

ABBREVIATIONS

CFS	-	CUBIC FEET PER SECOND
EX.	-	EXISTING
EOP	-	EDGE OF PAVEMENT
FL	-	FLOWLINE
PROP.	-	PROPOSED
SD	-	STORM DRAIN
TEMP.	-	TEMPORARY
INV.	-	INVERT
(XXX.X)	-	EXISTING ELEVATIONS
℄	-	PROPERTY LINE

LEGEND

- WETLAND BASIN
- EX. BOUNDARY
- FLOWLINE
- GRADING LIMITS

APN: 370-231-06

SANTIAGO CREEK

EX. FLOWLINE

PROPOSED GRADING LIMITS

GRADING LIMITS

WETLAND BASIN
0.71 AC

BOTTOM
348.5

WETLAND BASIN
0.29 AC

BOTTOM
328.5

FUTURE SD PIPE

FUTURE SD PIPE

TOP OF SLOPE

TOP OF SLOPE

TOP OF BERM

TOP OF BERM

1:1.5 SLOPE

1.5:1 SLOPE

1.5:1 SLOPE

TEMP. 1.5:1 SLOPE

TEMP. 1.5:1 SLOPE

2:1 SLOPE

2:1 SLOPE

2:1 SLOPE

2:1 SLOPE

4:1 SLOPE

4:1 SLOPE

2:1 SLOPE

(360)

(357)

(357)

(355)

(355)

(350)

(340)

(330)

(320)

(330)

(360)

307.50 FL

320.0 FL

324.9 FL

328.73 FL

341.93 FL/INV

342.27 INV

355.80 FL

20' 0 20' 40' 60'
SCALE IN FEET

APRIL 1, 2021

KWC ENGINEERS
CIVIL ENGINEERS ● PLANNERS ● SURVEYORS
1880 COMPTON AVENUE, SUITE 100 ● CORONA, CA. 92881-3370 ● 951-734-2130

J.N. 15.12452.15 R:\15\12452\15\FINAL\EXH\12452 BASIN.dwg

Pacific BioScience, Inc.

0 25 50 100 150 200 Feet

LEGEND

Project Site

Developed

USF&WS Mitigation Area

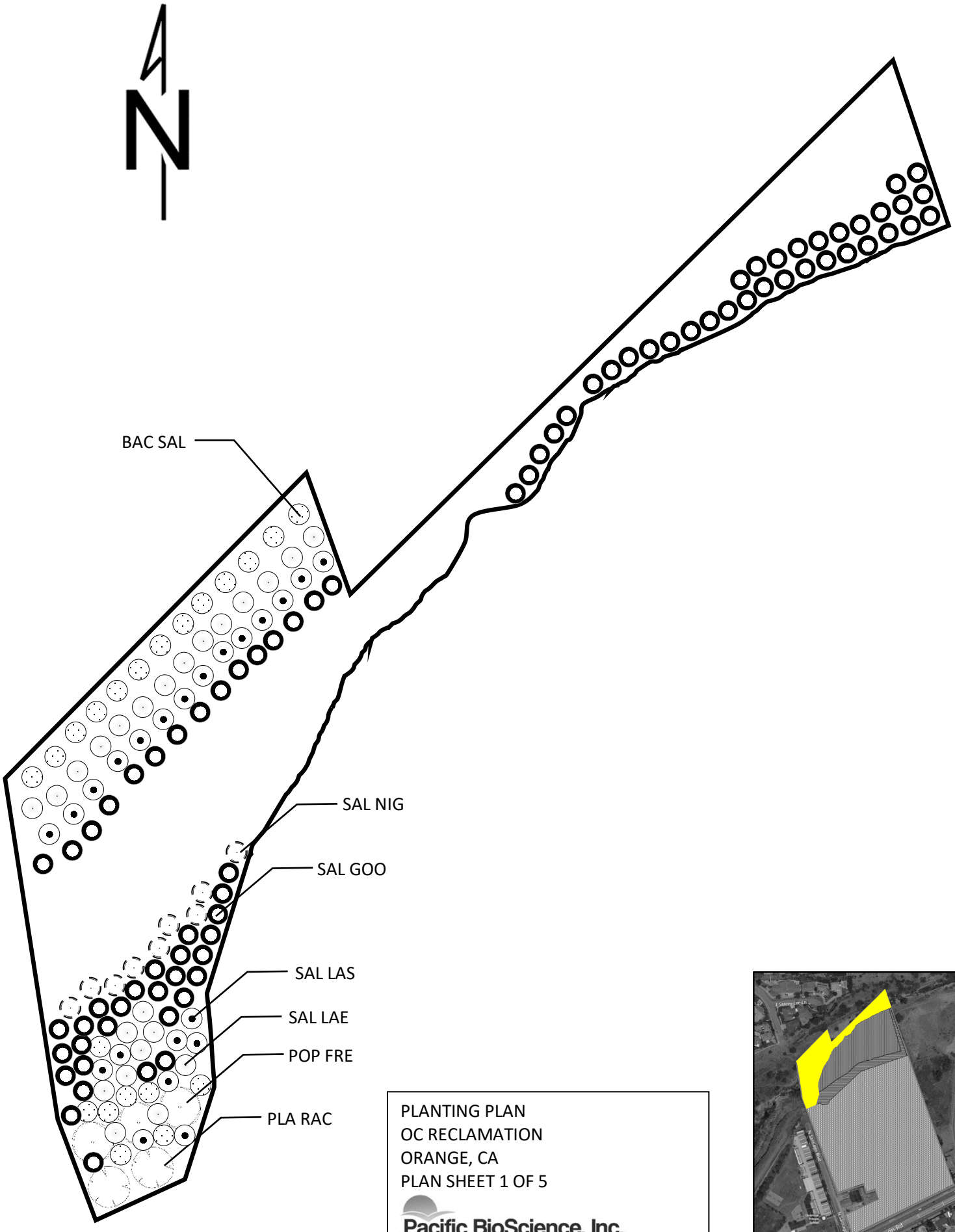
- Enhanced (willow thickets/mulefat scrub)
- Enhanced (LBV transitional foraging habitat)
- Created Riparian

RWQCB Mitigation Area

- Wetland

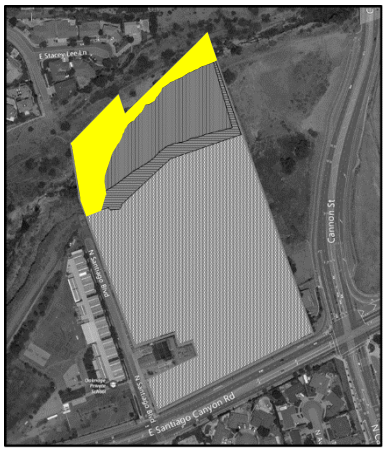
FIGURE 3

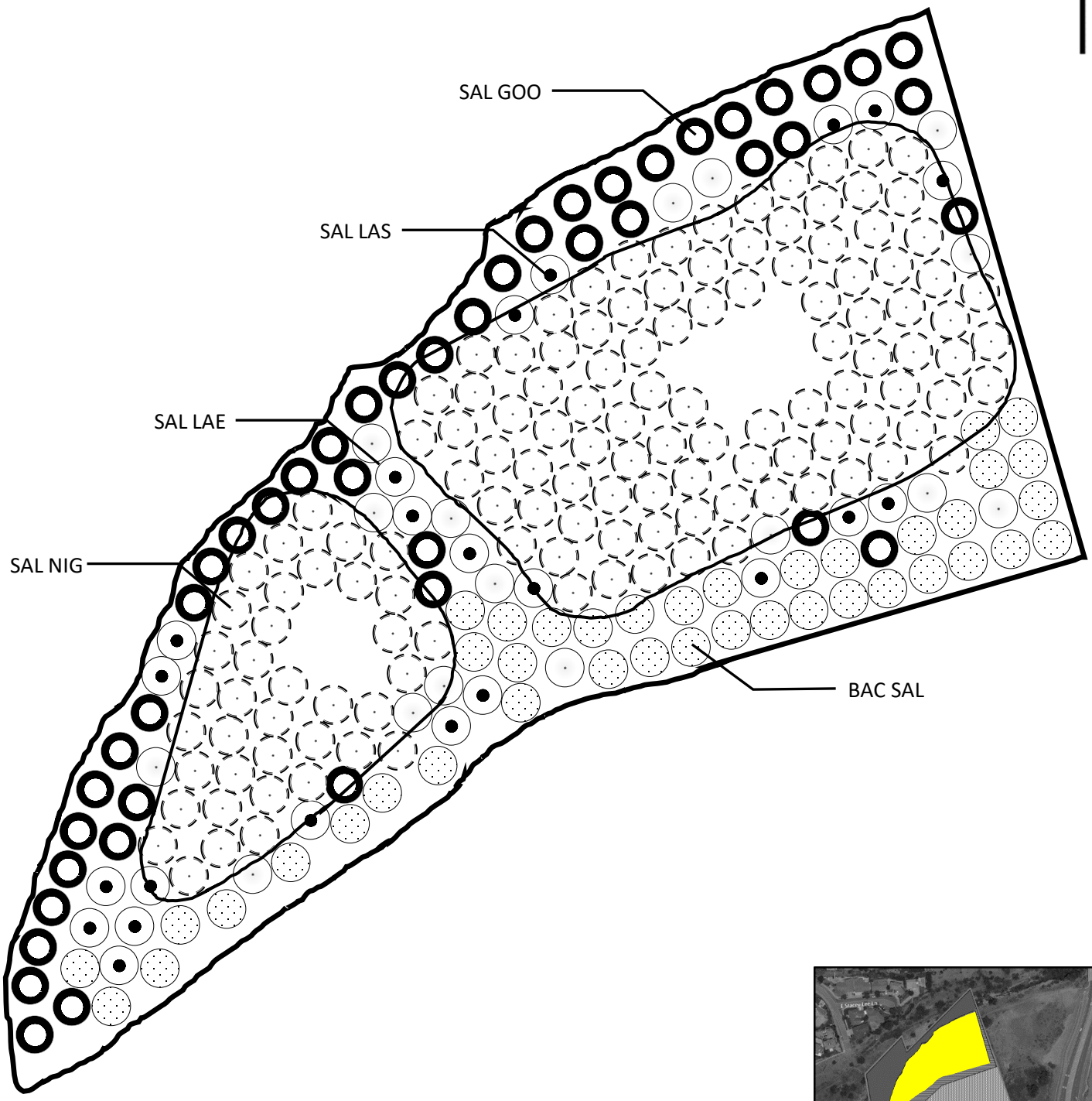
OC Reclamation
Enhancement/Creation Areas

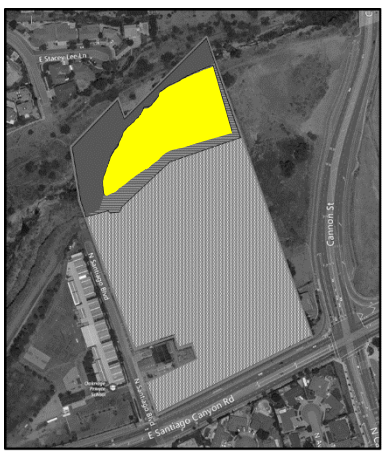


PLANTING PLAN
OC RECLAMATION
ORANGE, CA
PLAN SHEET 1 OF 5

Pacific BioScience, Inc.

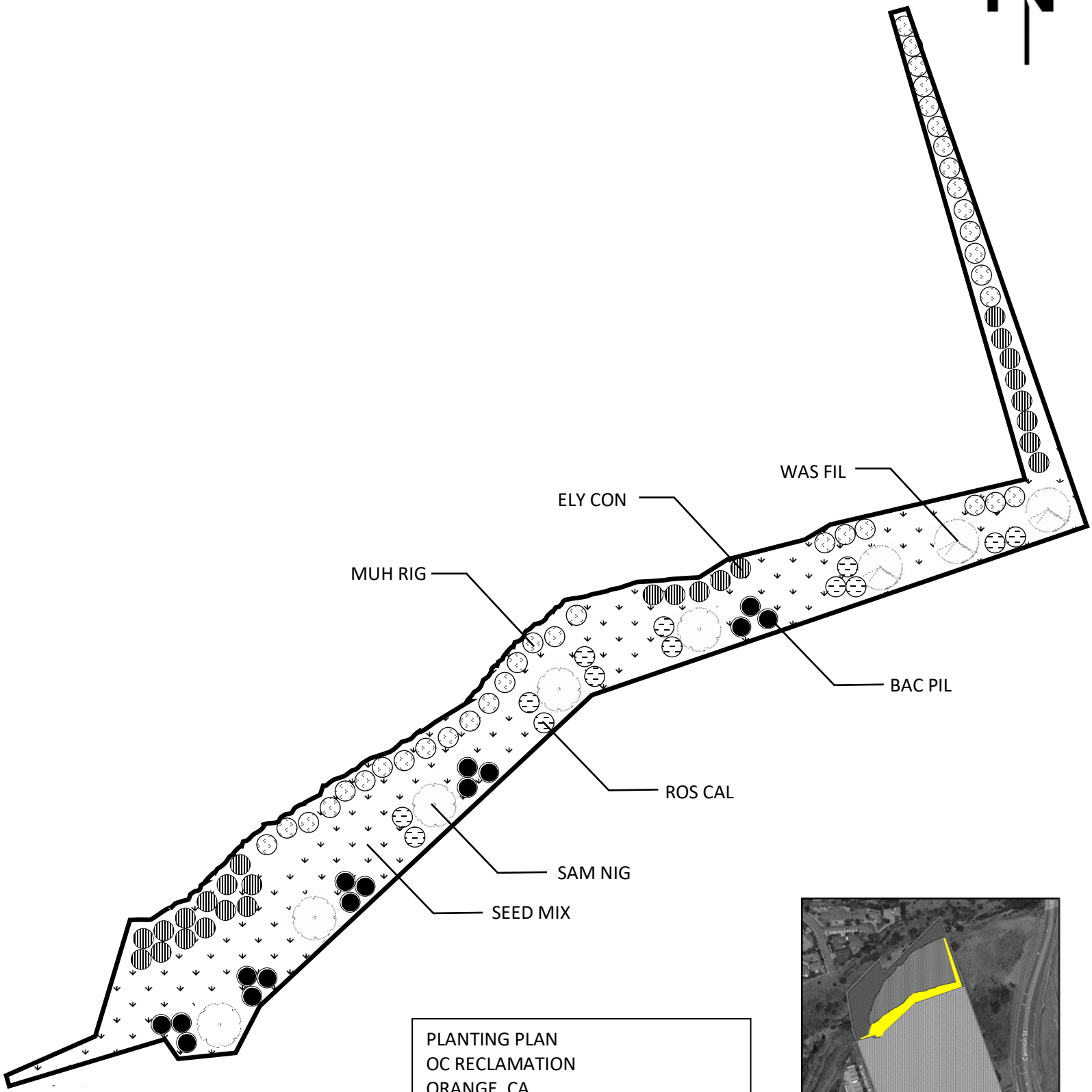






PLANTING PLAN
OC RECLAMATION
ORANGE, CA
PLAN SHEET 2 OF 5

Pacific BioScience, Inc.



PLANTING PLAN
OC RECLAMATION
ORANGE, CA
PLAN SHEET 3 OF 5

Pacific BioScience, Inc.

PLANT LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE (GALLON)	PLANT SPACING (FEET)
TREES				
PLA RAC	PLATANUS RACEMOSA	CALIFORNIA SYCAMORE	15	20
POP FRE	POPULUS FREMONTII	COTTONWOOD	15	20
SAL GOO	SALIX GOODDINGII	GOODINGS WILLOW	1 OR CUTTINGS	5-20
SAL LAE	SALIX LAEVIGATA	RED WILLOW	1 OR CUTTINGS	5-20
SAL LAS	SALIX LASIOLEPIS	ARROYO WILLOW	1 OR CUTTINGS	5-20
SAL NIG	SALIX NIGRA	BLACK WILLOW	1 OR CUTTINGS	5-20
SAM NIG	SAMBUCUS NIGRA	BLACK ELDERBERRY	15	15
WAS FIL	WASHINGTONIA FILIFERA	CALIFORNIA FAN PALM	10	15
SHRUBS				
BAC PIL	BACCHARIS PILULARIS	COYOTE BRUSH	1	8-10
BAC SAL	BACCHARIS SALICIFOLIA	MULEFAT	1	8-10
ELY CON	ELYMUS CONDENSATUS	GIANT WILD RYE	1	8-10
MUH RIG	MUHLENBERGIA RIGENS	DEERGRASS	1	8-10
ROS CAL	ROSA CALIFORNICA	CALIFORNIA ROSE	1	8-10

PLANTING PLAN
OC RECLAMATION
ORANGE, CA
PLAN SHEET 4 OF 5

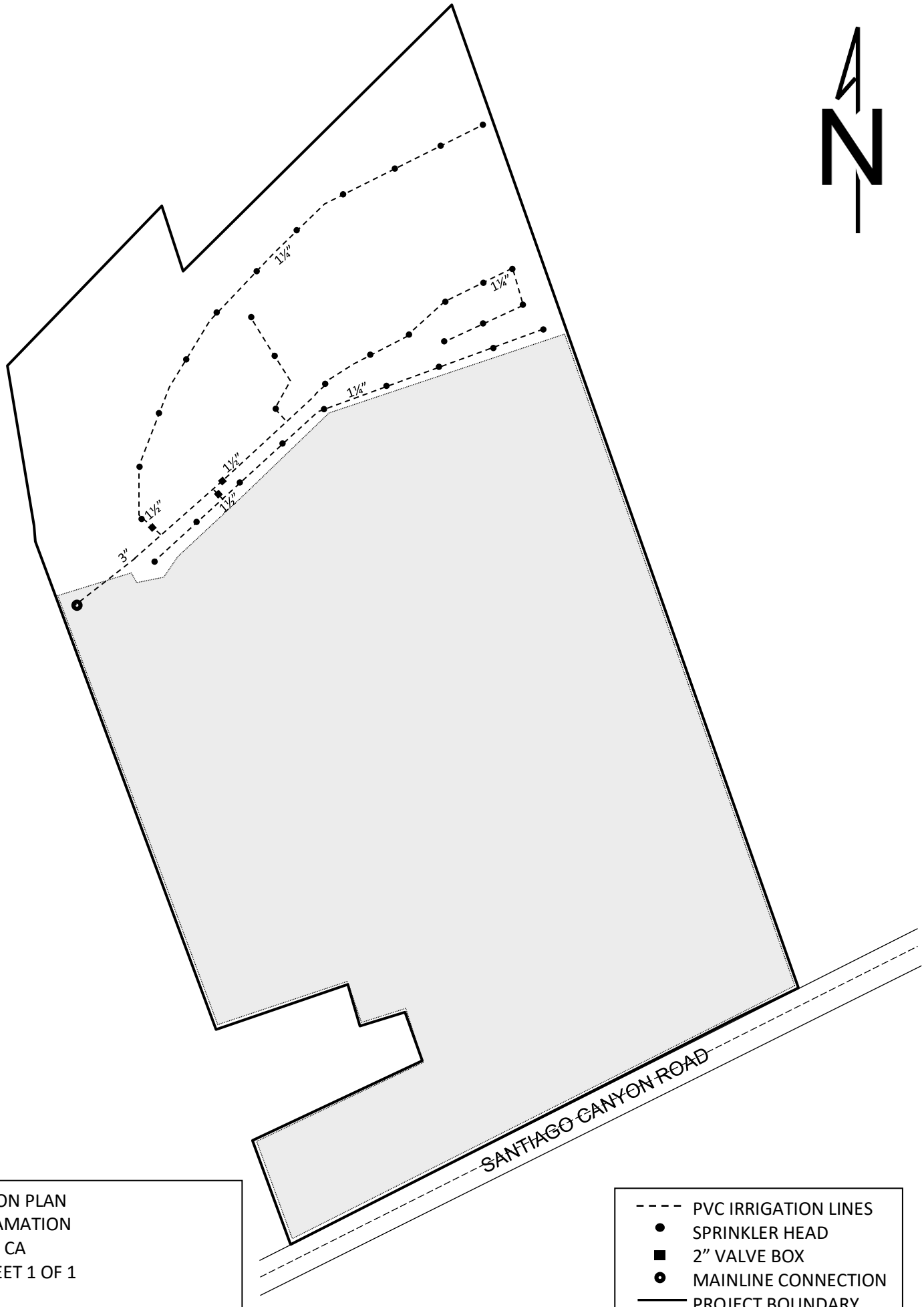
Pacific BioScience, Inc.

SEED MIX

BOTANICAL NAME	COMMON NAME	LBS/ACRE
BLUE EYED GRASS	SISYRINCHIUM BELLUM	2
CALIFORNIA BEE PLANT	SCROPHULARIA CALIFORNICA	2
CATERPILLAR PHACELIA	PHAECILIA CICUTARIA	2
COAST RANGE MELIC	MELICA IMPERFECTA	2
DOUGLAS' NIGHTSHADE	SOLANUM DOUGLASII	2
FIDDLENECK	AMSINCKIA MENZIESII	2
LADIES' TOBACCO	PSEUDOGNAPHALIUM CALIFORNICUM	2
LUPINE	LUPINUS BICOLOR	2
RAGWEED	AMBROSIA PSILOSTACHYA	2
SMALL FESCUE	VULPIA MICROSTACHYS	2
WILD CANTERBURY BELLS	PHACELIA MINOR	2

PLANTING PLAN
OC RECLAMATION
ORANGE, CA
PLAN SHEET 5 OF 5

Pacific BioScience, Inc.



IRRIGATION PLAN
OC RECLAMATION
ORANGE, CA
PLAN SHEET 1 OF 1

Pacific BioScience, Inc.

- PVC IRRIGATION LINES
- SPRINKLER HEAD
- 2" VALVE BOX
- MAINLINE CONNECTION
- PROJECT BOUNDARY
- *NOT A PART (NAP)*

Attachment B:

Biological Resources Assessment

Chandler's Orange Mine

BIOLOGICAL RESOURCES ASSESSMENT

September 2016

Prepared for:

Chandler's Sand and Gravel, LLC
17392 Daimler Street
Irvine, California 92614

*

Prepared by:

Jeff Johnson
Pacific BioScience, Inc.
156 Woodburne
Newport Beach, California 92660

Biological Resources Assessment

for

Chandler's Sand and Gravel, LLC

September 2016

Prepared By: _____ Date: 9/13/16

Jeff Johnson
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1.0 Introduction

This report presents the findings of a biological resource assessment for the project known as Chandler's Orange Mine located in the City of Orange, California. This study consists of a general biological evaluation of the site, its' potential to support special biological plant communities, plants, wildlife, and potential for water features. Below are the findings.

2.0 Project Location

The proposed project is approximately 14 acres and generally located north west of the intersection of East Santiago Canyon Road and Cannon Street in the City of Orange. The site is located on U.S. Geological Survey 7.5 minute topographic quadrangle map Orange. Santiago Creek bounds the project site on the north with residential development further to the north and to the south across East Santiago Canyon Road. Commercial development occurs to the west and disturbed open space further to the east across Cannon Street. The proposed project site is surrounded by development or disturbed open space.

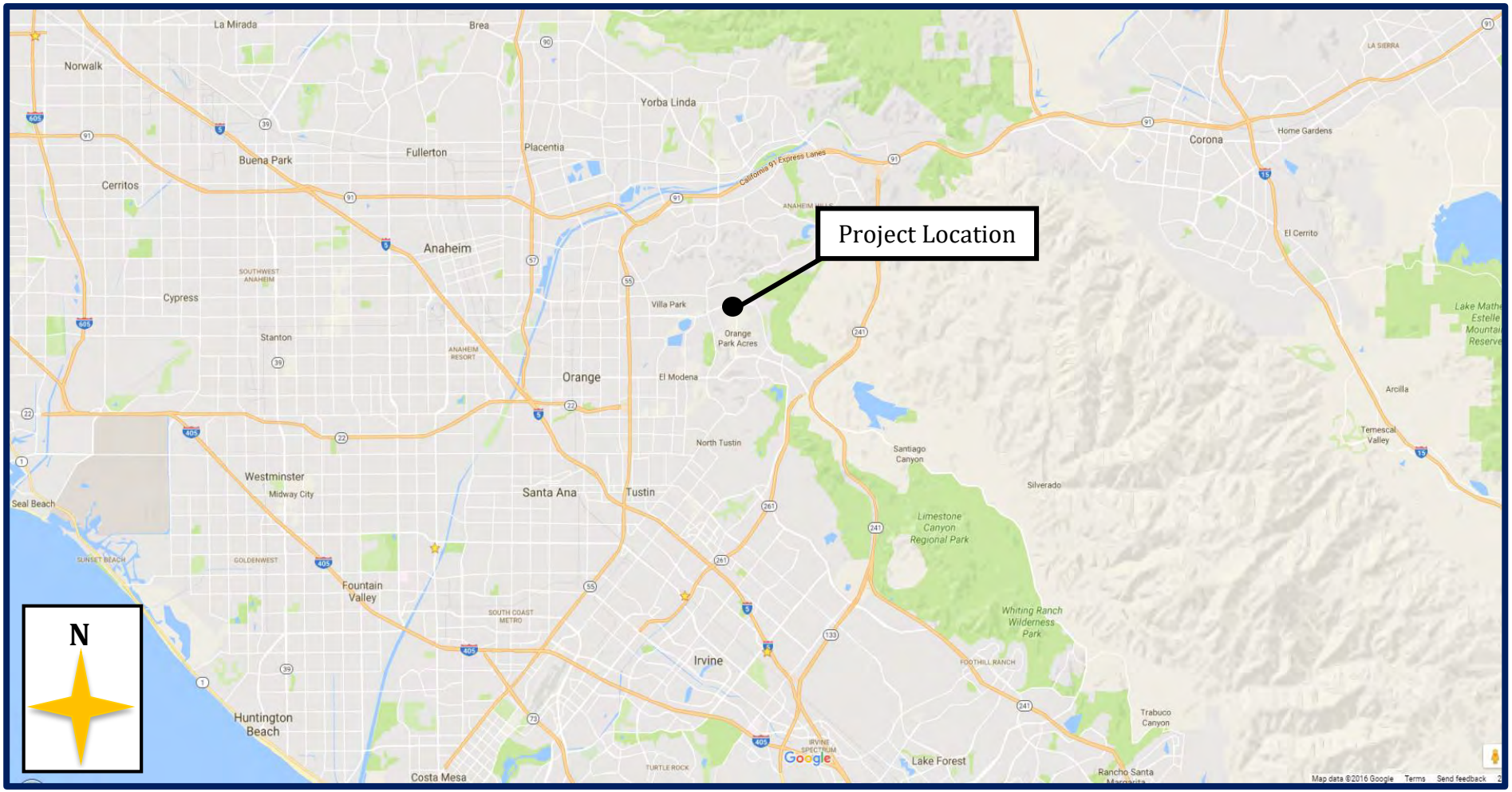

Figure 1: Regional Location

Figure 2: Local Vicinity Map

3.0 Background

The project site was an open sand and gravel mine for decades prior to operations stopping in the 1960's. Since that time the site has been graded and cleared of vegetation periodically with the most recent clearing occurring in approximately 2008 when the entire bottom of the mining pit was cleared of vegetation and graded. The open pit still exists today and access roads throughout the site continue to be cleared on a regular and frequent basis. The site is currently zoned for sand and gravel mining (S-G) according to the City of Orange Zoning Map.

4.0 Methods

Literature Review

Prior to visiting the project site, a review of the California Natural Diversity Data Base (CNDDB) and Biogeographic Information Observation System (BIOS) was conducted to identify if any special-status plant and animal species are known to occur within in the vicinity. These databases identify recorded locations of special-status plant and animal species in the project vicinity and, therefore, having the potential to occur on the project site. Also reviewed prior to a site visit were U.S. Fish and Wildlife Service Critical Habitat Portal online mapper to determine the presence of designated critical habitat, aerial photographs, and relevant USGS 7.5-minute topographical quadrangles.

Field Survey Methodology

Pacific BioScience biologist, Jeff Johnson, conducted site visits on May 13th and June 10th, 2016 under partly cloudy skies, and mostly clear skies with few scattered high clouds and warm weather conditions, respectively. The entire project site was traversed on foot for assessment of the habitat and identification of common and special-status plant and wildlife species. Adjacent open spaces were also viewed with the aid of an 8x42 power Swarovski binocular and 20x85 Swarovski spotting scope.

Plant communities were noted on aerial photographs and all species observed were noted in a field notebook.

The site visit also included identification of any potential wetlands or waterways under jurisdiction of the Army Corp of Engineers, California Department of Fish and Wildlife, or California Regional Water Quality Control Board.

5.0 Results and Recommendations

Literature Review

Upon a review of the CNDDB (CDF&W 2016), no special-status habitats are known to occur within the project site. However, several water and drainage features were noted and are discussed further below. Two special-status plant species and four special-status wildlife species occurrences are recorded within the vicinity of the project site. These six species are discussed further below.

A search of the U.S. Fish and Wildlife Service Critical Habitat online mapper (USF&WS 2011) indicates that the project site does not support designated critical habitat for any species listed under the Endangered Species Act. Also, the project site is not located within a Natural Communities Conservation Plan (NCCP) or Habitat Conservation Plan (HCP) area.

Soils

The project site is mapped as containing four soil series. A soil series is a group of soils with similar profiles. These profiles include major horizons with similar thickness, arrangement, and other important characteristics, which may promote favorable conditions for certain biological resources. These four soils series include the following:

> **168 – Modjeska gravelly loam, 0 to 2 percent slopes**: consists of deep, well-drained soils formed in mixed alluvium. Found on the coastal plain of southern California at elevations of 200 to 1,500 feet and often cultivated. Typically a grayish-brown or brown gravelly loam or gravelly fine sandy loam with less than one percent organic matter (Soil Survey Staff 2015).
>
> **185-Pits**: consists of open excavations from which soil and underlying material, mostly sand and gravel, have been removed for construction. Present land use is construction material, idle land, or ground water recharge if these areas are in a streambed (Soil Survey Staff 2015).
>
> **194-San Emigdio fine sandy loam, 0 to 2 percent slopes**: consists of very deep, well-drained soils that formed in dominantly sedimentary alluvium. Found on fans, floodplains, and narrow valleys at elevations of 100 to 2,000 feet and often historically cultivated or grassland. Typically a light- brownish gray fine sandy loam with many very fine roots throughout (Soil Survey Staff 2015).
>
> **197-Soboba gravelly loamy sand, 0 to 5 percent slopes**: consists of deep, excessively drained soils that formed in alluvium from predominantly granitic rock sources. Found on alluvial fans and floodplains at elevations of 25 to 3,700 feet and historically annual grass pasture. Typically a grayish brown stony loamy sand that is loose and very friable with many fine roots and interstitial pores (Soil Survey Staff 2015).

Field Survey

Existing Conditions

The project site is highly disturbed in most areas throughout with signs of native regrowth in two localized areas including one relatively small upland area and one riparian area at the bottom of the mining pit. These areas and other plant communities and land uses are discussed immediately below.

Plant Communities

Five plant communities and land uses were noted within the project limits: Disturbed, Eucalyptus Semi-natural Woodland Stands, Disturbed *Salix gooddingii* Woodland Alliance (Black willow thickets), Disturbed California Sagebrush, and Developed. These plant communities and their descriptions follow the organization as presented in "*A Manual of California Vegetation*" 2nd edition by John Sawyer, Todd Keeler-Wolf, and Julie Evens 2009. This reference is also the basis for the organization and description of plant communities noted within the CNDDB. Refer to Figure 3: "Plant Communities" for locations of each plant community and land use.

Figure 3: Plant Communities

1. Disturbed (9 Acres)

Disturbed areas include those that have been physically disturbed and are no longer recognizable as a native or naturalized vegetation association, but continue to retain a soil substrate. Typically vegetation, if present, is nearly exclusively composed of non-native plant species such as ornamentals or ruderal exotic species that thrive in disturbed areas. Examples of disturbed land include areas that have been graded, repeatedly cleared for fuel management purposes and/or experienced repeated use that prevents natural re-vegetation (i.e., dirt parking lots, trails that have been present for several decades), recently graded firebreaks, graded construction pads, construction staging areas, off-road vehicle trails, and old home-sites. Species observed in this plant community include: prickly Russian thistle (*Salsola kali*), telegraph weed (*Heterotheca grandiflora*), sow thistle (*Sonchus oleraceus*), common horseweed (*Conyza canadensis*), summer mustard (*Hirschfeldia incana*), and a sub-dominance of non-native grasses. This land cover typically occurs in areas with regular clearing and grading or poor soils such as along the pit slopes and access roads.

2. Eucalyptus Semi-natural Woodland Stands (1 Acre)

At least nine species of Eucalyptus species occur in California. The genus is native to Australia. It has yellowish-white flowers, narrow, lanceolate leaves and shredding bark in irregular strips. Widespread commercial plantings occurred after 1870 and in the late 1900's for lumber and firewood. Seedlings aggressively invade neighboring areas. Understories in groves of these fast-growing long-lived trees are usually depauperate. A buildup of allelopathic chemicals in the soil and high volumes of debris inhibit the establishment of other plants.

3. Disturbed *Salix gooddingii* Woodland Alliance (Black Willow Thickets) (2 Acres)

Disturbed black willow thickets are characterized as areas permanently or periodically inundated by water that have been significantly modified by human activity. Disturbed black willow thickets include portions of riparian habitat with an element of non-native species such as tamarisk (*Tamarix* spp.), but include native species such as: mule fat (*Baccharis salicifolia*), and cattails (*Typha* spp.).

Within the project site, this habitat was observed in the base of the pit and along the northern boundary bordering Santiago Creek. This habitat type observed on site was dominated by willows with some mule fat intermixed along the upland areas and cattails in the low-lying areas.

4. Disturbed California Sagebrush (1 Acre)

California sagebrush scrub is a series of habitat classification that include areas of fairly open cover dominated by California sagebrush (*Artemisia californica*) and

intermittent California buckwheat (*Erigonum fasciculatum*) and sage (*Salvia* spp.). Classifications vary by geographic location; however, species composition is typically similar. California sagebrush is found in coastal regions of Southern California. It is typically found on upland sites such as steep slopes, with shallow and rocky soils. Distribution includes along the coastal base of the Transverse and Peninsular ranges from central Los Angeles County south to beyond the Mexican border.

The California sagebrush habitat within the project site is found along the northern and eastern portion of the site. The presence of non-native vegetation interspersed indicates significant disturbances in the past. As such, it is classified as low quality California sagebrush habitat with intermixed non-native grasses.

5. Developed (1 Acre)

Developed land cover is classified as areas that have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported and retains no soil substrate. Developed land is characterized by permanent or semi-permanent structures, pavement, or hardscape, and landscaped areas that often require irrigation. Areas where no natural land is evident because a large amount of debris or other materials have been placed upon it may also be considered developed (e.g., car recycling plant, quarry). Characteristic vegetation includes unvegetated or landscaped with a variety of ornamental (usually non-native) plants.

Developed areas within the project limits are the access roads and existing structures.

Special-status Plants

Two special-status plant species are noted in the CNDDB as occurring within the vicinity mile of the project site (CDF&W 2016). Southern tarplant (*Centromadia parryi* ssp. *australis*) is listed as CNPS 1B.1. All plants with CNPS Rank 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the Fish and Game Code, and are eligible for state listing.

Southern tarplant prefers marshes, swamps, and riparian habitats. Potentially suitable habitat is present within the project site in the disturbed riparian plant community.

Pacific BioScience, Inc. conducted a focused plant survey in 2016 specifically in search of this special-status plant and none were found. Refer to the focused plant survey report (Pacific BioScience, Inc. 2016) for details of this study. Because none were found during focused surveys and because the site is highly disturbed, this special-status plant species is not expected to occur within the limits of the

proposed project and therefore no impact to this species is expected.

Many-stemmed dudleya (*Dudleya multicaulis*) is listed as CNPS 1B.1. All plants with CNPS Rank 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the Fish and Game Code, and are eligible for state listing. Many-stemmed dudleya is typically found in heavy clay soils or grassy slopes. No suitable habitat for this species is present within the project limits. As such, this special-status plant species is not expected to occur within the limits of the proposed project and therefore no impact to this species is expected.

Special-status Wildlife

1. Least Bell's Vireo (*Vireo bellii pusillus*) (Federal – Endangered; State – Endangered)

The project site contains suitable habitat for least Bell's vireo within the disturbed Red willow thicket. As such, a focused survey was conducted for this species. A pair of least Bell's vireo was detected within the riparian habitat at the bottom of the mining pit and therefore this area should be considered occupied by this species. For details please refer to the focused study report titled: "Least Bell's Vireo Protocol Survey Report" (First Carbon 2016a). Pre-construction surveys would also be necessary to determine presence/absence of the species prior to commencement of construction activities. Pre-construction surveys shall be conducted within 30 days of initial ground disturbance with the final site visit no more than 3 days prior to site clearing. This survey can be performed conjointly with the nesting bird surveys discussed below. Because this species is present within the project limits, Consultation with US F&WS and CA DF&W would be required. Additional details regarding this species will be provided as part of the permitting process.

2. Coastal California gnatcatcher (*Polioptila californica californica*) (Federal – Endangered; State – Endangered)

The project site contains suitable habitat for costal California gnatcatcher within the disturbed Riverside coastal sage scrub habitat. As such, a focused survey was conducted for this species. A pair of coastal California gnatcatchers was detected within the limits of the project and therefore this area should be considered occupied by this species. For details please refer to the focused study report titled: "Coastal California Gnatcatcher Protocol Survey Report" (First Carbon 2016b). Pre-construction surveys would also be necessary to determine presence/absence of the species prior to commencement of construction activities. Pre-construction surveys shall be conducted within 30 days of initial ground disturbance with the final site visit no more than 3 days prior to site clearing. This survey can be performed conjointly with the nesting bird surveys discussed below. Because this species is present within the project limits, Consultation with US F&WS and CA DF&W would be required. Additional details regarding this species will be provided as part of the

permitting process.

3. Coastal Cactus Wren (*Campylorhynchus brunneicapillus sandiegensis*) (Federal – None; State – Species of Special Concern)

There are noted occurrences in the CNDDB for this species within the vicinity of the proposed project site. This species was not detected during site visits and as such is not expected to occur within the project limits. However, this species could be present in the future and therefore pre-construction surveys for this species should be conducted again within 30 days of construction and can be conducted conjointly with nesting bird surveys described below.

4. Orangethroat Whiptail (*Aspidoscelis hyperythra*) (Federal – None; State – Species of Special Concern)

There is one noted occurrence for this species within the vicinity of the proposed project site. Orangethroat whiptail prefer washes and other sandy areas with patches of brush and rocks. Marginal suitable habitat is present within the project site in the vicinity of existing Drainages features 1 and 2 and none were detected during site visits. This species is not expected to occur within the limits of the proposed project. Impacts to potential suitable habitat should be avoided, if feasible.

Nesting Birds

Suitable habitat for raptors and other migratory birds was noted within and adjacent to the project site. All but two nesting birds are protected under Section 3503 of the Fish and Game Code (FGC), and raptors specifically are protected under Section 3503.5 of the FGC. Additionally, both the Migratory Bird Treaty Act and Section 3513 of the FGC prohibit the take or trading of migratory birds. The nesting period for raptors and other migratory birds is generally recognized by resource agencies as February 15 to August 31. Construction activities that occur during the nesting season could disturb active nests if construction occurs within 500 feet of an active raptor nest and approximately 150 feet for other migratory birds. Impacts to potential avian nesting habitat should be avoided during nesting season, if feasible. If avoidance is not feasible, a minimum of four pre-construction nesting surveys site visits, within 30 days of start of site clearing with the last visit no more than three days prior. No action is necessary if no active nests are found or if construction will occur during the non-breeding season (generally September 1 through February 14).

Jurisdictional Features

Three potential jurisdictional features were noted during site investigations. Two ephemeral drainages occur on the eastern area of the site and appear to flow into the third potential feature – the former mining pit – which contains riparian plant

species such as willow (*Salix gooddingii*). As such, a jurisdictional determination is needed and if features are determined jurisdictional, then a delineation would be necessary. If jurisdictional features will be impacted by the implementation of the proposed project, a permit from one or more of the resource agencies would be required.

6.0 References

California Department of Fish and Game (CDFG). 2005. Biogeographic Information and Observation System (BIOS 5). Website: https://map.dfg.ca.gov/bios/. Accessed March 20, 2016.

California Department of Fish and Wildlife (CDFW). 2015. CNDDB RareFind 5 California Natural Diversity Database Query for Special-Status Species. Website: https://map.dfg.ca.gov/rarefind/view /RareFind.aspx. Accessed March 20, 2016.

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United States Geological Survey (USGS). 2012. Orange, California 7.5-Minute Topographic Quadrangle Map. Washington, D.C.: U.S. Government Printing Office.

Aerial photography taken and provided by Trevor Wood of Chandler's Sand & Gravel, LLC

Appendix A: Representative Site Photographs

Aerial Photograph 1: Project Site – Looking South

Aerial Photograph 2: Project Site – Looking Northeast

Aerial Photograph 3: Project Site/Access Roads – Looking South

Aerial Photograph 4: Existing Access Roads

Attachment C:

Focused Plant Survey

Chandler's Orange Mine

FOCUSED PLANT SURVEY

July 2016

Prepared for:

Chandler's Sand and Gravel, LLC
17392 Daimler Street
Irvine, California 92614

*

Prepared by:

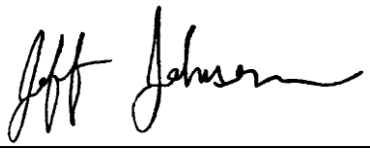
Jeff Johnson
Pacific BioScience, Inc.
156 Woodburne
Newport Beach, California 92660

Focused Plant Survey

for

Chandler's Sand and Gravel, LLC

July 2016

Prepared By:  Date: 7/20/16

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1.0 Introduction

This report presents the findings of a focused special-status plant survey for the project known as Chandler's Orange Mine located in the City of Orange, California. Below are the findings.

2.0 Project Location

The proposed project is approximately 14 acres and generally located north west of the intersection of East Santiago Canyon Road and Cannon Street in the City of Orange. The site is located on U.S. Geological Survey 7.5 minute topographic quadrangle map Orange. Santiago Creek bounds the project site on the north with residential development further to the north and to the south across East Santiago Canyon Road. Commercial development occurs to the west and disturbed open space further to the east across Cannon Street. The proposed project site is surrounded by development or disturbed open space.

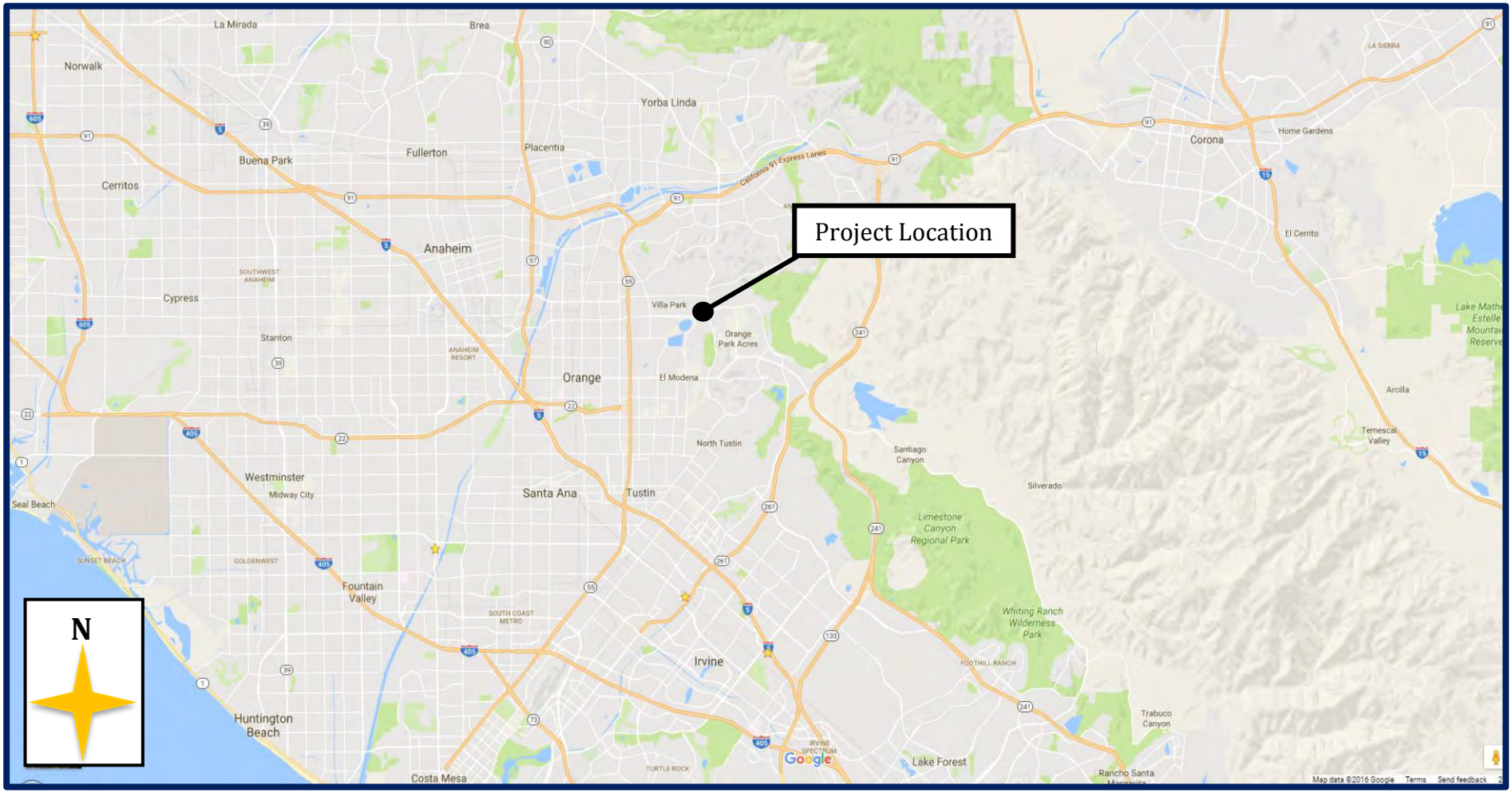

Figure 1: Regional Location

Figure 2: Local Vicinity Map

3.0 Background

The project site was an open sand and gravel mine for decades prior to operations stopping in the 1960's. Since that time the site has been graded and cleared of vegetation periodically with the most recent clearing occurring in approximately 2008 when the entire bottom of the mining pit was cleared of vegetation and graded. The open pit still exists today and access roads throughout the site continue to be cleared on a regular and frequent basis. The site is currently zoned for sand and gravel mining (S-G) according to the City of Orange Zoning Map.

4.0 Methods

Literature Review

Prior to visiting the project site, a review of available electronic databases, reports, and other sources was conducted. As part of the review, a comprehensive search was conducted to identify special-status plant species data relevant to the study area and vicinity. The following resources were used for this research and during field visits:

USGS 7.5-minute topographical quadrangles
Aerial photographs
California Fish and Wildlife California Natural Diversity Data Base (CNDDB) 2016
California Fish and Wildlife Biogeographic Information Observation System (BIOS)
U.S. Fish and Wildlife Service sensitive species occurrence database (USFWS 2016)
California Native Plant Society Inventory of Rare and Endangered Plants of California 2016
United States Department of Agriculture, Orange County Soil Survey (USDA 1971)

Field Survey Methodology

Pacific BioScience biologist, Jeff Johnson, conducted site visits during morning hours on March 24, April 19, and May 13, 2016. Weather conditions during site visits were normal for this time of day and year. No precipitation occurred during site visits. Also, reference sites for each special-status plants species noted on Figure 3 below was searched the day prior to site visits in March and April to ensure detectability. For Southern tarplant (*Centromadia parryi* ssp. *australis*) the reference sites along Newport Back Bay were used due to accessibility.

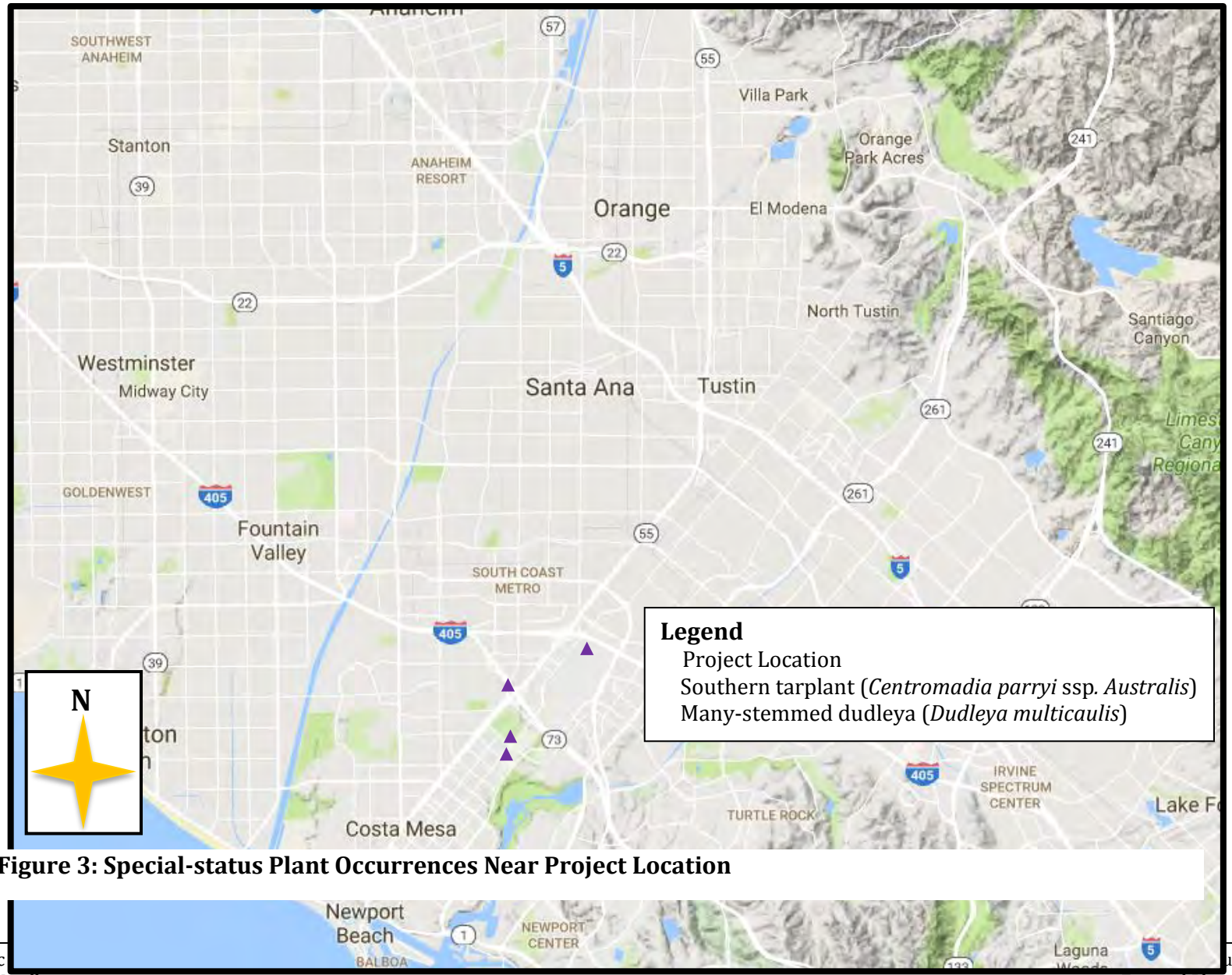

Figure 3: Special-status Plant Occurrences Near Project Location

The entire project site was traversed on foot in search of special-status plant species, in particular those noted in the literature search as occurring within the vicinity of the project site. Special attention was given to those areas where these species had a potential to occur, particularly the riparian area. Observations of interest were noted in a field notebook.

5.0 Results and Recommendations

Literature Review

Based upon the literature and database review, two special-status plant species are recorded within the vicinity of the project site (Figure 3). These two species are discussed below.

Southern tarplant (*Centromadia parryi* ssp. *australis*) is listed as CNPS 1B.1. All plants with CNPS Rank 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the Fish and Game Code, and are eligible for state listing. Southern tarplant is an annual herb that prefers marshes, swamps, and riparian habitats and has a blooming period of May through November.

Many-stemmed dudleya (*Dudleya multicaulis*) is a perennial herb endemic to California and listed as CNPS 1B.1. This species has a blooming period of April through July and is often found in chaparral, valley grasslands, and coastal sage scrub. It is typically found in heavy clay soils or grassy slopes. No suitable clay soil for this species is present within the project limits. As such, this special-status plant species is not expected to occur within the limits of the proposed project. However, Pacific BioScience, Inc. searched for this special-status species on grassy slopes during site visits.

Soils

The project site is mapped as containing four soil series. A soil series is a group of soils with similar profiles. These profiles include major horizons with similar thickness, arrangement, and other important characteristics, which may promote favorable conditions for certain biological resources. These four soils series include the following:

> **168 – Modjeska gravelly loam, 0 to 2 percent slopes**: consists of deep, well-drained soils formed in mixed alluvium. Found on the coastal plain of southern California at elevations of 200 to 1,500 feet and often cultivated. Typically a grayish-brown or brown gravelly loam or gravelly fine sandy loam with less than one percent organic matter (Soil Survey Staff 2015).
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material, mostly sand and gravel, have been removed for construction. Present land use is construction material, idle land, or ground water recharge if these areas are in a streambed (Soil Survey Staff 2015).

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197-Soboba gravelly loamy sand, 0 to 5 percent slopes: consists of deep, excessively drained soils that formed in alluvium from predominantly granitic rock sources. Found on alluvial fans and floodplains at elevations of 25 to 3,700 feet and historically annual grass pasture. Typically a grayish brown stony loamy sand that is loose and very friable with many fine roots and interstitial pores (Soil Survey Staff 2015).

Field Survey

No special-status plants were noted during site visits. Common plant species that were observed within the project area are included in a table within Appendix A: Plant List Compendium. The project site is highly disturbed in most areas throughout with signs of native regrowth in two localized areas including one relatively small upland area and one riparian area at the bottom of the mining pit. Pacific BioScience, Inc. conducted focused effort within the riparian area for the southern tarplant. A plant community map (Figure 4) and site photos in Appendix B: Representative Site Photos, are included for reference.

Figure 4: Plant Communities

Recommendations

No further studies with regard to special-status plants are warranted at this time. However, should initiation of construction activities be delayed beyond the winter of 2016/2017 additional focused plant surveys should be conducted during spring 2017. It should be noted that because weather conditions over the past several years have been uncharacteristic of southern California, focused surveys for southern tarplant could be conducted as early as February or March, depending on weather conditions during winter. If conditions warrant, an additional survey should be conducted immediately prior to construction as part of the pre-construction biological surveys.

6.0 References

Calflora. 2016. The Calflora Database. Website: http://www.calflora.org/. Accessed March 20, 2016.

California Department of Fish and Game (CDFG). 2005. Biogeographic Information and Observation System (BIOS 5). Website: https://map.dfg.ca.gov/bios/. Accessed March 20, 2016.

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United States Geological Survey (USGS). 2012. Orange, California 7.5-Minute Topographic Quadrangle Map. Washington, D.C.: U.S. Government Printing Office.

Appendix A: Plant Compendium

Scientific Name	**Common Name**
ANACARDIACEAE	
Malosma laurina	Laurel sumac
Schinus molle	Peruvian pepper tree
APIACEAE	
Foeniculum vulgare	Fennel
ARECACEAE	
Phoenix canariensis	Canary Island date palm
Washingtonia filifera	California fan palm
ASTERACEAE	
Artemesia californica	California sagebrush
A. douglasiana	Mugwort
Baccharis pilularis	Coyote brush
B. salicifolia	Mulefat
Ericameria palmeri	Palmer's goldenbush
Erigeron canadensis	Common horseweed
Heterotheca grandiflora	Telegraph weed
Pulicaria paludosa	Spanish sunflower
Sonchus oleraceus	Sow thistle
Carduus pycnocephalus	Italian thistle
Xanthium strumarium	Rough cocklebur
BORAGINACEAE	
Heliotropium curassavicum	Heliotrope
BRASSICACEAE	
Brassica nigra	Black mustard
B. rapa	Field mustard
Hirschfeldia incana	Summer mustard
CACTACEAE	
Opuntia littoralis	Prickly pear cactus
CAPRIFOLIACEAE	
Sambucus mexicana	Mexican elderberry
CHENOPODIACEAE	
Salsola kali	Russian thistle

Scientific Name	**Common Name**
EUPHORBIACEAE	
Ricinus communis	Castor bean
GERANIACEAE	
Erodium cicutarium	Red-stemmed fillaree
HYDROPHYLLACEAE	
Eriodictyon californicum	Yerba santa
JUGLANDACEAE	
Juglans californica	California black walnut
LAMIACEAE	
Salvia apiana	White sage
LYTHRACEAE	
Lythrum hyssopifolia	Loosestrife
MYRTACEAE	
Eucalyptus tereticornis	Red gum
Eucalyptus sideroxylon	Ironbark
PLATANACEAE	
Platanus racemosa	California sycamore
POACEAE	
Avena barbata	Slender oat
Bromus carinatus	California brome
B. diandrus	Ripgut brome
B. hordeaceus	Soft brome
POLYGONACEAE	
Eriogonum fasciculatum	California buckwheat
SALICACEAE	
Populus fremontii	Cottonwood
Salix gooddingii	Black willow
Salix laevigata	Red willow
SOLANACEAE	
Nicotiana glauca	Tree tobacco

Scientific Name	**Common Name**
TAMARICACEAE	
Tamarix ramosissima	Tamarisk
TYPHACEAE	
Typha latifolia	Cattail
VITACEAE	
Vitis californica	California wild grape

Appendix B: Representative Site Photographs

Photograph 1: Project Site – Looking South

Photograph 2: View of access roads on Project Site

Photograph 3: View of willow thickets

Photograph 4: View of eucalyptus groves

Attachment D:

Jurisdictional Delineation and Determination

Chandler's Orange Mine

JURISDICTIONAL DETERMINATION AND DELINEATION

November 2020

Prepared for:

Chandler's Sand and Gravel, LLC
17392 Daimler Street
Irvine, California 92614

*

Prepared by:

Jeff Johnson
Pacific BioScience, Inc.
56 Kingsbury
Irvine, California 92620

Jurisdictional Determination And Delineation

for

Chandler's Sand and Gravel, LLC

November 2020

Prepared By: _____ Date: 11/3/2020

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1.0 Background

This report presents a jurisdictional determination and delineation of resources subject to regulation by the California Regional Water Quality Control Board, (RWQCB). Studies for resources under jurisdiction of U.S. Army Corp of Engineers and California Department of Fish and Wildlife were conducted previously and applications for permits were submitted. These resource agencies determined no impact or de minimis impact within their jurisdiction would occur and therefore no permit would be required. A Biological Assessment and Low Effect Habitat Conservation Plan was submitted to U.S. Fish and Wildlife Service (FWS) for impacts to black willow plant community. The FWS issued a Biological Opinion in December 2019.

This determination and delineation report is intended to accompany a permit application package submitted to the Water Board for impacts to waters of the state.

2.0 Introduction

On behalf of Chandler Sand and Gravel, LLC, Pacific BioScience, Inc. conducted a jurisdictional determination and delineation on the project site known as Orange Mine (Project) located within the City of Orange. Focused jurisdictional delineation surveys were conducted within the property limits, which includes portions that would be impacted with the implementation of the project and portions that would be preserved (Santiago Creek).

Jurisdictional features depicted in this report represent an estimation of the jurisdictional boundaries within the overall limits of the property boundary and are subject to modification following agency verification. Below are the findings.

3.0 Project Description

The project site was an open sand and gravel mine for decades prior to operations stopping in the 1960's. Over a five-year period, the proposed project would fill the exposed mine pit and grade to level most of the surrounding area within the property limits, avoiding Santiago Creek at the northern boundary of the property. An earthen berm would be created near the northern boundary separating Santiago Creek from the balance of the site. Restoration and expansion of Santiago Creek is included as part of the Low Effect HCP approved by U.S. Fish and Wildlife Service.

4.0 Project Location

The project is approximately 14 acres and generally located northwest of the intersection of East Santiago Canyon Road and Cannon Street within the City of

Orange. It can be found on U.S. Geological Survey 7.5 minute topographic quadrangle map Orange. Santiago Creek bounds the project site on the north with residential development further to the north and to the south across East Santiago Canyon Road. Commercial development occurs to the west and disturbed open space further to the east across Cannon Street. The proposed project site is surrounded by development or disturbed open space. See Figure 1 Project Location and Figure 2 Project Site.

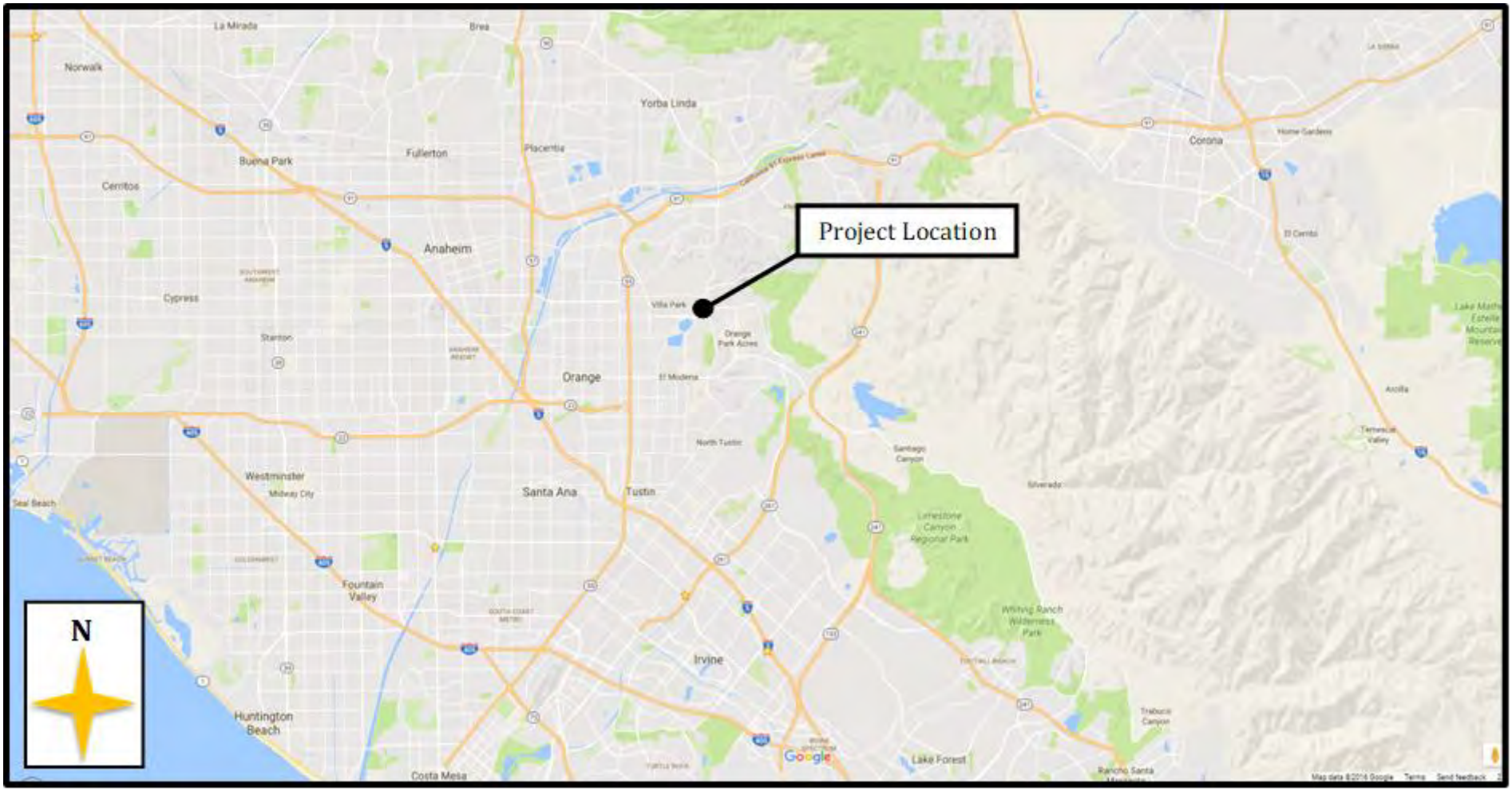

Figure 1: Project Location

Figure 2: Project Site

5.0 Existing Site Conditions

HYDROLOGY

The Project is located within a semi-arid region that has little natural perennial surface water. As a result of the variability of rainfall, surface hydrology is dominated by ephemeral washes, flowing only during storm events and remaining dry otherwise. Storm-water runoff from Cannon Road flows into a basin located generally in the middle of the site via these washes.

The hydrologic regime for the area follows the general Mediterranean climate, with cool, wet winters and warm, dry summers, but is also occasionally influenced by summer monsoons. The average rainfall for the project site is approximately 13 inches annually with most of the rainfall occurring December to March.

VEGETATION

The project site is generally undeveloped with remnants of an historic mining pit. Because the mining operation ceased many years ago, vegetation has grown over time within and surrounding the mining area. As such, vegetation occurring on the site today is highly disturbed non-native plants and patchy regrowth areas of native plants. Please see Figure 3 Plant Communities.

Figure 3: Plant Communities

SOILS

The project site is mapped as containing three soil series. A soil series is a group of soils with similar profiles. These profiles include major horizons with similar thickness, arrangement, and other important characteristics. These three soils series are:

> **185-Pits**: consists of open excavations from which soil and underlying material, mostly sand and gravel, have been removed for construction. Present land use is construction material, idle land, or ground water recharge if these areas are in a streambed (Soil Survey Staff 2020).
>
> **194-San Emigdio fine sandy loam, 0 to 2 percent slopes**: consists of very deep, well-drained soils that formed in dominantly sedimentary alluvium. Found on fans, floodplains, and narrow valleys at elevations of 100 to 2,000 feet and often historically cultivated or grassland. Typically a light- brownish gray fine sandy loam with many very fine roots throughout (Soil Survey Staff 2020).
>
> **197-Soboba gravelly loamy sand, 0 to 5 percent slopes**: consists of deep, excessively drained soils that formed in alluvium from predominantly granitic rock sources. Found on alluvial fans and floodplains at elevations of 25 to 3,700 feet and historically annual grass pasture. Typically a grayish brown stony loamy sand that is loose and very friable with many fine roots and interstitial pores (Soil Survey Staff 2020).

6.0 Regulatory Background Information

Regional Water Quality Control Board (RWQCB)

The RWQCB regulates activities within state and federal waters under Section 401 of the Clean Water Act (CWA) and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). Section 401 of the CWA requires that "any applicant for a Federal permit for activities that involve a discharge to Waters of the United States, shall provide the Federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the Federal Clean Water Act." Therefore, in California, before the USACE will issue a Section 404 permit, applicants must apply for and receive a Section 401 Water Quality Certification or waiver from the RWQCB. Although the Water Quality Certification must be sought for the same effects to waters of the United States as indicated in a Section 404 permit, certification can also cover effects to water bodies that are not USACE jurisdictional (i.e., isolated wetlands).

The RWQCB regulates actions that would involve "discharging waste, or proposing to discharge waste, within any region that could affect the water of the state" (Water

Code 13260(a)), pursuant to provisions of the state Porter-Cologne Act. The RWQCB takes jurisdiction of surface waters that are outside of the jurisdiction of USACE as "Waters of the State", which generally includes all surface water features. Under this Act, the RWQCB regulates all such activities, as well as dredging, filling, or discharging materials into Waters of the State, that are not regulated by the USACE due to a lack of connectivity with a navigable water body or lack of an OHWM. Waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code 13050 (e)).

Additional information regarding Waters of the State taken from Staff Report March 2019 "State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State" follows:

CLEAN WATER ACT

"In 1972, Congress enacted the CWA to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The CWA is the primary federal law controlling water pollution in the United States, which applies to all "waters of the United States," including many wetlands. Waters of the United States are defined by U.S. EPA and the Corps in federal regulations and roughly comprise the nation's navigable waters, and tributaries to those waters, that have a connection to interstate commerce. Under CWA section 303(c), the states are primarily responsible for the adoption and periodic review of water quality standards for all waters within their boundaries, with oversight by the U.S. EPA. Water quality standards consist of designated beneficial uses of waters, water quality objectives to protect beneficial uses, and an anti-degradation policy. The State Water Board is designated as the state water pollution control agency for all purposes under the CWA.

Section 301 of the CWA prohibits the discharge of any pollutant except in accord with certain other provisions of the Act, including the permit program under CWA section 404 that authorizes the issuance of permits by the Corps for the discharge of dredged or fill material. Section 502 of the CWA defines "pollutant" as "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water." Dredged or fill material is thus considered a pollutant under the CWA.

Under section 404 of the CWA, the Corps and U.S. EPA regulate discharges of dredged or fill material to waters of the United States, pursuant to the federal Guidelines.34 In addition, under section 401 of the CWA, applicants for section 404 permits must also receive a section 401 water quality certification from the state from which the discharge originates to ensure that the project will comply with all applicable provisions of the CWA and state water quality standards."

PORTER-COLOGNE WATER QUALITY CONTROL ACT

The Porter-Cologne Act provides a framework to protect water quality in California. The Porter-Cologne Act was enacted in 1969 as Division 7 of the Water Code, and is the primary water quality law in California. The Porter-Cologne Act addresses two primary functions: water quality control planning and waste discharge regulation. The State Legislature, in adopting the Porter-Cologne Act, directed that California's waters "shall be regulated to attain the highest water quality which is reasonable" and charges the Water Boards with protecting all waters of California, defined as "any surface water or groundwater, including saline waters, within the boundaries of the State." This encompasses all waters of the state, including those not under federal jurisdiction.

This statute identifies the nine major hydrologic basins in the state, establishes the Regional Water Boards with responsibility for each basin, and directs that each Regional Water Board adopt a water quality control plan (basin plan). 37 Each basin plan identifies the beneficial uses of all waters in the basin, specifies numeric and narrative water quality objectives needed to protect the uses, and presents an implementation strategy. The Porter-Cologne Act further requires that anyone who plans to discharge waste where it might affect waters of the state must first notify the Water Boards. The Water Boards identify the sources of pollutants that threaten the quality of the state's waters and regulate those sources by imposing requirements to control the discharge of pollutants in permits. The Porter-Cologne Act also provides a variety of civil and criminal enforcement tools.

Under the Porter-Cologne Act, the Water Boards regulate waste discharges that could affect water quality by issuing WDRs. Discharges of dredged or fill material have historically been treated as discharges of waste by the Water Boards. It is the longstanding interpretation of the State Water Board that the definition of "waste" set forth in Water Code section 13050(e) includes dredged or fill material. (Mem. from William R. Attwater, State Water Resources Control Board, to Danny Walsh, Board member (July 28, 1987).) In 1972, the California Legislature amended the Porter-Cologne Act to provide the state the necessary authority to implement CWA section 402, or the National Pollutant Discharge Elimination System (NPDES), in lieu of a U.S. EPA-administered program under the CWA. The Water Boards issue some WDRs that also serve as NPDES permits. Subsequent amendments have allowed the Water Boards to assume most of the responsibilities of the CWA, including the CWA section 404 permit program. To date, California has not applied for the 404 program.

The State Water Board oversees and guides the Regional Water Boards through several activities, including the adoption of regional water quality control plans and policies for water quality control. The State Water Board is also charged with adopting state plans and policies for water quality control, which may consist of

principles or guidelines deemed essential by the State Water Board for water quality control. State policies38 address water quality concerns for surface and groundwater that overlap regional board boundaries, are statewide in scope, or are otherwise considered significant.

The Water Boards require that discharges to high quality waters39 comply with State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," which generally requires that high quality waters be protected. The California anti-degradation policy also incorporates the federal anti-degradation policy which requires the maintenance and protection of existing uses and water quality conditions necessary to support such uses. In addition, the federal anti-degradation policy maintains and protects water quality in outstanding national resource waters.

REGULATION OF DISCHARGES OF DREDGED OR FILL MATERIAL IN CALIFORNIA

The regulation of dredged or fill material is accomplished through federal and state regulations. Applicants must comply with section 404 and section 401 of the CWA as well as the Porter-Cologne Act. In California, applicants must obtain a 401 certification for projects that receive a federal license or permit, such as a section 404 permit from the Corps, if waters that would be impacted fall under federal jurisdiction. If a project impacts waters of the state that do not fall under federal jurisdiction, the applicant need not obtain a section 404 permit or a 401 certification, but instead must receive approval from the Water Boards through the adoption of WDRs. Lastly, if a project would impact both waters inside and outside of federal jurisdiction an applicant would obtain a combination 401 certification/WDRs from the Water Boards and a section 404 permit from the Corps.

Federal and State Regulatory Framework for Dredge or Fill Discharges under Individual Orders

Discharges of dredged or fill material to waters of the state must comply with federal and state requirements (tables 5-1 and 5-2, respectively). The Corps has primary permitting authority for CWA section 404, subject to U.S. EPA approval, and issues individual and general permits. The Corps issues individual permits for specific discharges, and general permits for classes of activities on a regional, programmatic or nationwide basis. An applicant must obtain a section 404 permit from the Corps before discharging dredged or fill material into waters of the United States.

When applying for individual section 404 permits, applicants are subject to comprehensive review under the federal Guidelines. Under these regulations, the applicant must demonstrate that three steps, in the following sequence, have been taken to reduce impacts to federal waters: first, all practicable measures to avoid impacts to federal waters must be exhausted; second, minimization measures must

be incorporated into the project design to further reduce any remaining impacts; and lastly, if after all practicable avoidance and minimization measures have been applied, the applicant must provide compensatory mitigation for any unavoidable impacts. The applicant is required to provide this information as an "alternatives analysis" when applying for an individual permit. Under the federal Guidelines, the Corps is required to select the least environmentally damaging practicable alternative (LEDPA) for the project. For projects that impact waters of the state that are also under federal regulation, an applicant must obtain a section 404 permit from the Corps and a section 401 water quality certification from the Water Boards verifying that the project will comply with state water quality standards.

For projects that would impact waters of the state that are outside federal jurisdiction, applicants must obtain WDRs from the Water Boards. In cases when a project may impact waters of the state that include waters both inside and outside of federal jurisdiction, an applicant must obtain a section 404 permit from the Corps, and a combination section 401 certification and WDRs from the Water Boards."

TERMINOLOGY

The use of terms such as Waters of the State, wetland, riparian and aquatic can lead to confusion. We attempt to define each below:

Waters of the State – Any surface water or groundwater, including saline waters, within the boundaries of the State.

Wetland – Refers to the Federal definition, and requires three parameters to be present: hydrologic indicators, hydric soil, and hydric vegetation. Wetlands are a subset of Waters of the State.

Riparian – Areas within and adjacent to rivers, streams, and creeks. This area supports plant species adapted to occasional or permanent flooding or saturated soil. Riparian habitat is an indication of Waters of the State.

Aquatic – Water-oriented habitats such as rivers, streams, creeks, lakes, or ponds. Aquatic habitat is an indication of Waters of the State.

7.0 Methodology

Pre-Survey Investigations

Prior to conducting field determinations and delineations, the following resources were reviewed to identify potentially jurisdictional areas: aerial imagery (USGS 2010 and 2011), 7.5' USGS quadrangle, the National Wetlands Database, the on-line web soil survey (NRCS 2013), and hydric soils list for the area. The aerial imagery from 2010 for Orange County was 1-meter resolution with a scale of 1:400 to digitize potential jurisdictional features using ArcGIS™. The aerial imagery, combined with these other resources, was used to create a map with potentially jurisdictional features. A data dictionary was developed using the criteria in the datasheet for the identification of the OHWM in arid west regions using the Trimble Pathfinder Office™ software. The fields in the data dictionary are identified in Table 2.

Table 2. Data Dictionary

GIS Field Name	Alias	Field Type/Options
GPS_ID	GPS ID	2013-[GPS Letter]-Auto increment
Types		
StreamType	Stream Type	[SNR, DW, SRV, Wetland]*
CDFW_Type	CDFW Type	
Other_Type	Other Type	
Widths		
Hyd_Wid_ft	Hydro Width (ft)	#
CdfwWid_ft	CDFW Width (ft)	#
WettedWid	Wetted Width (ft)	#
TOB_Width	Top of Bank Width (ft)	#
RVDL_Width	Riparian Vegetation Drip Line Width (ft)	#
WaterDepth	Stream Water Depth (ft)	#
OWHM_Width	OWHM Width (ft)	#
OWHM Indicators		
Natural_ln	Natural Line Impressed on Bank	Check Box
Shelving		Check Box
Dest_veg	Destruction of Terrestrial Vegetation	Check Box
Litter	Presence of Litter and Debris	Check Box
Wracking	Wracking	Check Box
Matted_veg	Vegetation Matted/Bent/Absent	Check Box
Sed_Sorting	Sediment Sorting	Check Box
LL_Disturb	Leaf Litter Disturbed	Check Box
Scour	Scour	Check Box
Sed_depos	Sediment Deposition	Check Box
Bed_banks	Bed and Banks	Check Box
WaterStain	Water Staining	Check Box
Crust	Crust/Hardpan/Hardened Flow Pattern	Check Box

GIS Field Name	Alias	Field Type/Options
Algae	Algae	Check Box
ChgPlntCom	Change in Plant Community	Check Box
ChgAvgSed	Change in Average Sediment Texture	Check Box
ChgVegSpec	Change in Vegetation Species	Check Box
ChgVegCvr	Change in Vegetation Cover	Check Box
ChgBnkSlop	Break in Bank Slope	Check Box
OtherIndic	Other Indicator	Textbox
OWHM_Pic	OWHM Photo #'s	Textbox
OWHMPicDir	OWHM Photo Direction	[N, S, E, W, Upstream, Downstream]
OWHM_note	OWHM Notes	Textbox
Floodplain Unit		
FP_Unit	Floodplain Unit	[Low-Flow Channel, Active Floodplain, Low Terrace]
AvgSedText	Average Sediment Texture	Textbox
TotVegCvr	Total Vegetation Cover	#
Tree_Cvr	Tree Cover	#
Scrub_Cvr	Shrub Cover	#
Herb_Cvr	Herb Cover	#
Com_Stage	Community Successional Stage	[NA, Early, Mid, Late]
Floodplain Indicators		
Mudcracks	Mudcracks	Check Box
Ripples	Ripples	Check Box
Debris	Drift and/or Debris	Check Box
FP_BedBank	Bed and Banks	Check Box
Benches	Benches	Check Box
Soil_Dev	Soil Development	Check Box
Sur_Relief	Surface Relief	Check Box
FP_Other	Other Floodplain Indicators	Textbox
FP_Notes	Floodplain Notes	Textbox
Dominant Veg for SRV		
Dom_Plant	Dominant Plant Species	Textbox
DomStature	Stature	[Herb, Shrub, Tree]
Pct_Cover	Percentage Cover	#
Other		
Normal_Cir	Do Normal Circumstances Exist on Site?	Yes/No
Disturbed	Is the Site Significantly Disturbed?	Yes/No
Influences	Anthropogenic influences on the channel system	Textbox
Site_Disc	Brief Site Description	Textbox
Hydro_Veg	Hydrophobic Vegetation	Yes/No
Wetland	Wetland Hydrology	Yes/No

GIS Field Name	Alias	Field Type/Options
Photo	Photo #'s	Textbox
PhotoDir	Photo Direction	[N, S, E, W, Upstream, Downstream]
Gen_Notes	General Notes	Text

* SNR = Stream with No Riparian vegetation DW = Dry Wash SRV = Stream with Riparian Vegetation Wetland = Wetland

8.0 Field Survey

Site visits were conducted on October 1, 16, 21, and 26, 2020 by Pacific BioScience, Inc. biologists Andrew Johnstone and Jeff Johnson. Weather conditions were normal for this time of year. No rainfall has occurred within the recent past and soil conditions were generally dry.

The entire project site was visually surveyed. Where jurisdictional features were present, the extent of potential Waters of the State and the extent of wetland and riparian/aquatic areas. Guidelines, including *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008a), *Arid West Delineation Manual* (USACE 2008b), the *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United* States (USACE 2010), were used.

The perimeter and/or stream center of the majority of features was mapped using a post-processing capable global positioning system (GPS) unit with sub-meter accuracy (i.e., Trimble™ GeoXT). Streambed widths were based on evidence of OHWM as observed during the field survey. In addition, each of the drainages was evaluated for the presence or absence of sediment deposits, litter/debris, water stains, soil shelving, and/or exposed roots indicating active hydrology within the channel. Streambed widths and other lateral limits of jurisdiction were measured with a tape measure and recorded in the GPS units or occasionally on a map for later digitization. The extent of associated riparian habitat was based on the extent of the canopy of the riparian community within the feature. Bank-to-bank width measures were also taken where features lacked riparian vegetation. Feature characteristics and measurements were recorded directly into the data dictionary in the GPS unit. Characteristics of the majority of drainage features were also documented in photographs.

Delineation of wetlands was conducted in accordance with the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Arid West Region Supplement, Version 2.0) (USACE 2008b). At suspected wetland locations, two paired data point locations were sampled as to their

vegetation, hydrology, and soils. At each paired location, one point was located within the estimated wetland area, and the other point was situated outside the limits of the estimated wetland area. These data were used to support a determination of wetland or non-wetland status. All wetland data were recorded on Arid West Region - Wetland Determination Data Forms (Appendix A). A soil pit was excavated to a depth of 18 inches at each data point. The soil was then examined for presence or absence of hydric soil indicators. The matrix color and mottle color (if present) of the soil was determined using the Munsell Soil Color Charts. Features with no evidence of wetland hydrology, and which supported only upland vegetation, were evaluated for upward limits of jurisdiction only and not for wetland parameters.

Post-Processing of Field Data

The data collected in the field were transferred from the GPS to a personal computer, and differential correction post-processing was performed. The data were then viewed and analyzed for verification, edited, and converted to a Geographic Information System (GIS) format at the time of download. GIS software (i.e., ArcGIS™) was used to develop the geodatabase and the shapefiles depicted on the maps following.

9.0 Results

The jurisdictional status of wetlands and non-wetland water features are summarized below.

Waters of the State, specifically wetlands and riparian/aquatic habitats were determined to be present within the project site. These features were mapped and can be viewed in Figure 4 and 5.

Fourteen (14) soil test pits were excavated to determine the extent of the jurisdictional wetland within the riparian pit (as seen in Figure 4). These pits were excavated to analyze the soils within the property boundaries in addition to determining if hydrophytic vegetation or signs of hydrology were present. The locations of these pits can be viewed in Figure 4. Data sheets for each soil pit location are attached in Appendix A: Wetland Determination Data Forms and photographs of each soil pit can be viewed in Appendix B: Soil Pit Photographs.

Through conducting the jurisdictional delineation, it was determined there is a well-defined physical bench that separates the wetland pit from riparian around most of the basin which is supported by the soils that were examined at each pit.

Figure 4: Jurisdictional Features Map

Figure 5: Jurisdictional Features Map

Santiago Creek
This feature is located on the northern boundary of the project site and is considered non-wetland waters of the U.S. and falls under the jurisdiction of USACE and RWQCB as it is connected to traditional navigable waters (TNW). A total of 0.61 acres of this jurisdictional feature occur within the project limits and was determined by the presence of water and riparian habitat located within the bed, bank, and channel. It should be noted, that this feature will not be impacted by the proposed project.

Riparian WoS
The presence of riparian habitat dominated by hydrophytic vegetation occurs here due to water accumulation during and immediately following rain events and is therefore considered RWQCB jurisdiction. This area is located near the center of the project site and forms a buffer around the "wetland pit" and accounts for approximately 0.92 acres of non-wetland waters under RWQCB jurisdiction.

Wetland Pit WoS
This jurisdictional feature is located near the center of the project site where the elevation is low, allowing for water to collect from runoff during and immediately following rain events. Since the mine has no longer been in operation, this has resulted in the formation of a wetland over time, and meets the definition of a wetland as all three parameters including hydrophytic vegetation, hydrology, and hydric soils are met. A total of 0.96 acres of wetland Waters of the State under RWQCB jurisdiction are present within the project limits.

Ephemeral Drainage 1
This drainage is ephemeral in nature and only conveys water runoff from adjacent roads into the man-made mining pit during and immediately following rain events. For this reason, it is considered jurisdictional under RWQCB as it is considered Waters of the State. Approximately 0.03 acres of non-wetland waters occur within Drainage 1. It should be noted this drainage does not consist of any riparian vegetation and therefore it is not classified as riparian waters.

Ephemeral Drainage 2
This drainage is ephemeral in nature and only conveys water runoff from adjacent roads into the man-made mining pit during and immediately following rain events. For this reason, it is considered jurisdictional under RWQCB as it is Waters of the State. Approximately 0.01 acres of non-wetland waters occur within Drainage 2. It should be noted this drainage does not consist of any riparian vegetation and therefore is not classified as riparian waters.

6.0 References

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandler's Orange Mine City/County: Orange/Orange Sampling Date: 10/16/20

Applicant/Owner: OC Reclamation State: CA Sampling Point: 1

Investigator(s): Andrew Johnstone, Jeff Johnson Section, Township, Range: S-23, T-4S, R-9W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): Mediterranean Lat: 33.8124252 Long: -117.7974540 Datum: NAD 83

Soil Map Unit Name: 185 - Pits NWI classification: Freshwater forest

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks: The site is an abandoned surface mine that is highly disturbed and erosion continues. Plants are mixed non-native and native. Hydrology is from storm water run-off from adjacent streets into the basin.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10x10')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix goodingii	10	Y	FACW
2.			
3.			
4.			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____	= Total Cover	
Herb Stratum (Plot size: 10x15')			
1. Xanthium strumarium	2	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	2	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 98 % Cover of Biotic Crust 40

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	95	5YR 5/8	5	D	M	Clay	faint redox depletions

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks: Redox features observed within the soil layer

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Biotic crust present at the surface

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandlers Orange Mine City/County: Orange/Orange Sampling Date: 10/16/20

Applicant/Owner: OC Reclamation State: CA Sampling Point: 2

Investigator(s): Andrew Johnstone, Jeff Johnson Section, Township, Range: S-23, T-4S, R-9W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Concave Slope (%): 4

Subregion (LRR): Mediterranean Lat: 33.812501 Long: -117.797416 Datum: NAD83

Soil Map Unit Name: 185 - Pits NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:
Soil pit is on the upland edge of slope adjacent to depressional wetland. The site is an abandoned surface mine that is highly disturbed and erosion continues. Plants are mixed non-native and native. Hydrology is from storm water run-off

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10x10')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix goodingii	60	Y	FACW
2.			
3.			
4.			
	60 = Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		

Herb Stratum (Plot size: 5x5')			
1. Brassica Nigra	30	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	30 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:
Sampling point is located on top of bank/terrace and has willows overhanging into wetland area below

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-6	10YR 4/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

No hydric soil indicators present within soil layers

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandler's Orange Mine City/County: Orange / Orange Sampling Date: 10/16/20

Applicant/Owner: OC Reclamation State: CA Sampling Point: 3

Investigator(s): Andrew Johnstone, Jeff Johnson Section, Township, Range: S-23, T-4S, R-9W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): Med. Terranean Lat: 33.812382 Long: -117.771685 Datum: NAD 83

Soil Map Unit Name: 185 - Pits NWI classification: Freshwater Forest

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:
This soil pit lies on the edge of the wetland on a gentle south facing slope

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10x10')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix goodingii	20	Y	FACW
2.			
3.			
4.			
	20 = Total Cover		
Sapling/Shrub Stratum (Plot size: 10x10)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 10x10')			
1. cocklebur - Xanthium strumarium	25	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	25 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust 40

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	95	5YR 5/4	5	C	M	sandy	faint redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Sandy redox present within soil layers between 1-6 inches

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Biotic crust prevalent throughout the bare ground

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandler's Orange Mine City/County: Orange / Orange Sampling Date: 10/16/20

Applicant/Owner: OC Reclamation State: CA Sampling Point: 4

Investigator(s): Andrew Johnstone, Jeff Johnson Section, Township, Range: S-23, T-4S, R-9W

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 4

Subregion (LRR): Mediterranean Lat: 33.812402 Long: -117.797726 Datum: NAD83

Soil Map Unit Name: 185 - Pits NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
This soil pit is part of the gentle upland slope adjacent to wetland boundary

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10x10')	Absolute % Cover	Dominant Species?	Indicator Status
1. salix gooddingii	50	Y	FACW
2.			
3.			
4.			
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____	= Total Cover	
Herb Stratum (Plot size: 10x10')			
1. castor bean - Ricinus communis	5	Y	FACU
2. Spanish sunflower - Pulicaria paludosa	2	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	7	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	= Total Cover	

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67.67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	100						Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators present within the soil layers

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandler's Orange Mine City/County: Orange/orange Sampling Date: 10/16/20

Applicant/Owner: OC Reclamation State: CA Sampling Point: 5

Investigator(s): Andrew Johnstone, Jeff Johnsen Section, Township, Range: S-23 T-4S R-9W

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): Mediterranean Lat: 33.812409 Long: -117.797328 Datum: NAD83

Soil Map Unit Name: 185- pits NWI classification: freshwater forest

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:
This soil pit is located adjacent the boundary of the wetland within the slope going down to the depressional feature.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10x10')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix goodingii	50	Y	FACW
2.			
3.			
4.			
	50 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 10x10')			
1. Brassica nigra	2	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	2 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 98 % Cover of Biotic Crust 80

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
Biotic crust prevalent on surface of bare ground

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/2	95	5YR 5/8	5	D	M		Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Redox features present within the soil layer

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Biotic crust visible at the surface.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandler's Orange Mine City/County: Orange/Orange Sampling Date: 10/16/20

Applicant/Owner: OC Reclamation State: _____ Sampling Point: 6

Investigator(s): Andrew Johnstone, Jeff Johnson Section, Township, Range: S 23, T4S, R9W

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): Mediterranean Lat: 33.812466 Long: -117.797270 Datum: NAD 83

Soil Map Unit Name: 185 – Pits NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks: Soil pit located on top of gentle slope that eventually levels out into depressional wetland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10x10)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix goodingii	80	Y	FACW
2.			
3.			
4.			
	80 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Brassica nigra	10	N	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	10 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	10YR 4/2	100						Very sandy well drained soils

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No redox features observed within the soil layers

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandlers Orange Mine City/County: Orange/Orange Sampling Date: 10/21/20
Applicant/Owner: OC Reclamation State: CA Sampling Point: 7
Investigator(s): Andrew Johnstone, J. Johnson Section, Township, Range: S-23, T-4S, R-9W
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 10
Subregion (LRR): Mediterranean Lat: 33.811847 Long: -117.799460 Datum: NAD 83
Soil Map Unit Name: 185 - Pits NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes (X) No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: The site is an abandoned surface mine, that is highly disturbed and erosion continues. Plants are mixed non-native and native. Hydrology is storm water runoff from streets, into basin

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 x 10 ~~ft~~)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix gooddingii	80	Y	FACW
2. Tamarisk	10	N	FAC
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ____)			
1. castor bean (Ricinus communis)	10	~~Y~~	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species 80	x 2 =	160
FAC species 10	x 3 =	30
FACU species 10	x 4 =	40
UPL species	x 5 =	
Column Totals: 100 (A)		230 (B)

Prevalence Index = B/A = 2.3

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
18	10YR 3/2	100					Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Very sandy and gravelly, well drained soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

This soil pit is located on a slope of the abandoned mine and no hydrology indicators are present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandlers Orange Mine City/County: Orange/Orange Sampling Date: 10/21/20

Applicant/Owner: OC Reclamation State: CA Sampling Point: 8

Investigator(s): A. Johnstone, J. Johnson Section, Township, Range: S-23, T-4S, R-9W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): Mediterranean Lat: 33.811887 Long: -117.799449 Datum: NAD83

Soil Map Unit Name: 185 Pits NWI classification: Freshwater Forest

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____ Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks: The site is an abandoned surface pit mine that is highly disturbed and erosion continues. Plants are mixed native and non-native. Hydrology is storm water runoff from streets into basin.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10x10m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix goodingii	50	Y	FACW
2. Tamarisk	50	Y	FAC
3.			
4.			
	100 = Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		

Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 90 % Cover of Biotic Crust 90

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2	98	5YR 5/8	2	C	M	Sandy loam	faint redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

Very sandy soil with redox features throughout the layer

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Biotic crust visible at surface

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandlers Orange Mine City/County: Orange / Orange Sampling Date: 10/21/20
Applicant/Owner: OC Reclamation State: CA Sampling Point: 9
Investigator(s): A. Johnstone, J. Johnson Section, Township, Range: S-23, T-4S, R-9W
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Concave Slope (%): 20
Subregion (LRR): Mediterranean Lat: 33.811798 Long: -117.797112 Datum: NAD 83
Soil Map Unit Name: 185: Pits NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes X No ____
Is the Sampled Area within a Wetland? Yes ____ No X

Remarks: The site is an abandoned surface mine that is highly disturbed and erosion continues. Plants are mixed native and non-native, mostly native. Hydrology is storm water runoff from streets into basin.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10x10')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix gooddingii	100	Y	FACW
2.			
3.			
4.			
	100 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 60

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No redox features present within soil layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Biotic crust present at this soil pit. Located on slope

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandler's Orange Mine City/County: Orange/Orange Sampling Date: 10/21/20
Applicant/Owner: OC Reclamation State: CA Sampling Point: 10
Investigator(s): A. Johnstone, J. Johnson Section, Township, Range: S-23, T-4S, R-9W
Landform (hillslope, terrace, etc.): ~~terrace~~ basin Local relief (concave, convex, none): concave Slope (%): 0
Subregion (LRR): Mediterranean Lat: 33.811851 Long: -117.797084 Datum: NAD 83
Soil Map Unit Name: 185-Pits NWI classification: Freshwater Forested
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____
Is the Sampled Area within a Wetland? Yes X No ____

Remarks: The site is an abandoned surface mine that is highly disturbed and erosion continues. Plants are mixed native and non-native. Hydrology is storm water runoff from streets into basin.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 x 10')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix goodingii	75	Y	FACW
2.			
3.			
4.			
	75 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5x5')			
1. Pluchea odorata	70	Y	FACW
2. Castor bean - Ricinus communis	5	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust 5

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2	98	5YR 5/8	2	C	M	Sandy loam	faint redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

Gravelly soil. Redox features throughout the layer

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Biotic crusts present at surface

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandler's Orange Mine City/County: Orange/Orange Sampling Date: 10/21/20
Applicant/Owner: OC Reclamation State: CA Sampling Point: 11
Investigator(s): A. Johnstone, J. Johnson Section, Township, Range: S-23, T-4S, R-9W
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 20
Subregion (LRR): Mediterranean Lat: 33.811808 Long: -117.796829 Datum: NAD-83
Soil Map Unit Name: 185 - Pits NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X
Is the Sampled Area within a Wetland? Yes ____ No X

Remarks: The site is an a bandoned surface mine that is highly disturbed and erosion continues. Plants are mixed native and non-natives. Hydrology is stormwater runoff from streets into basin.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10x10 m)	Absolute % Cover	Dominant Species?	Indicator Status
1. salix goodingii	80	Y	FACW
2. eucalyptus sp.	20	N	-
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover			
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: No hydric soil indicators present throughout the soil layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology indicators present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandlers Orange Mine City/County: Orange/Orange Sampling Date: 10/21/20
Applicant/Owner: OC Reclamation State: CA Sampling Point: 12
Investigator(s): A. Johnstone, J. Johnson Section, Township, Range: S-23, T-4S, R-9W
Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 1
Subregion (LRR): Mediterranean Lat: 33.811824 Long: -117.796835 Datum: NAD 83
Soil Map Unit Name: 185- Pits NWI classification: Freshwater forested
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes N No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes N No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks: The site is an abandoned surface mine that is highly disturbed and erosion continues. Plants are mixed native and non-native. Hydrology is storm water runoff from streets into basin.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 x 10 m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix gooddingii	75	Y	FACW
2. Eucalyptus sp	25	N	
3.			
4.			
	100 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 10

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
2-18	10YR 3/3	95	5YR 5/8	5	C	M	Sandy	faint redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

Sandy with gravel. Many redox features throughout the layer

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Biotic crust present at the surface

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandlers Orange Mine City/County: Orange/Orange Sampling Date: 10/21/20
Applicant/Owner: OC Reclamation State: CA Sampling Point: 13
Investigator(s): A. Johnstone, J. Johnson Section, Township, Range: S-23, T-4S, R-9W
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 5
Subregion (LRR): Mediterranean Lat: 33.812156 Long: -117.76820 Datum: NAD 83
Soil Map Unit Name: 185 - Pits NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: the site is an abandoned surface mine that is highly disturbed and erosion continues. Plants are mixed, native and non-native. Hydrology is stormwater runoff from streets into basin.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 x 10 m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix gooddingii	70	Y	FACW
2. Eucalyptus sp.	30	N	
3.			
4.			
	100 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	2.5YR 4/3	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: No redox features present within the soil layer

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology indicators present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Chandlers Orange Mine City/County: Orange/Orange Sampling Date: 10/21/20
Applicant/Owner: OC Reclamation State: CA Sampling Point: 14
Investigator(s): A. Johnstone, J. Johnson Section, Township, Range: S-23, T-4S, R-9W
Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 1
Subregion (LRR): Mediterranean Lat: 33.812117 Long: -117.796883 Datum: NAD83
Soil Map Unit Name: 185-17.4s NWI classification: freshwater forested

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks: The site is an abandoned surface mine that is highly disturbed and erosion continues. Plants are native. Hydrology is storm water runoff into basin from streets.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 x 10 m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix goodingii	95	Y	FACW
2.			
3.			
4.			
	95	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____	= Total Cover	
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	____	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	= Total Cover	

% Bare Ground in Herb Stratum 5% % Cover of Biotic Crust 10

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
2-18	7.5YR 4/3	90	5YR 5/8	10	C	M	Sandy	prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

Redox features throughout the sandy soil layer

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Biotic crust present at the surface.

Appendix B: Soil Pit Photographs

Soil Pit #1

Soil Pit #2

Appendix B: Soil Pit Photographs

Soil Pit #3

Soil Pit #4

Appendix B: Soil Pit Photographs

Soil Pit #5

Soil Pit #6

Appendix B: Soil Pit Photographs

Soil Pit #7

Soil Pit #8

Appendix B: Soil Pit Photographs

Soil Pit #9

Soil Pit #10

Appendix B: Soil Pit Photographs

Soil Pit #11

Soil Pit #12

Appendix B: Soil Pit Photographs

Soil Pit #13

Soil Pit #14

Attachment E:

Biological Opinion

United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

In Reply Refer To:
FWS-OR-17B0149-19CPA0084

February 6, 2019
Sent by Email

Mr. John Robertson
President
OC Reclamation, LLC
17392 Daimler Street
Irvine, California 92614

Dear Mr. Robertson:

We are pleased to enclose a copy of your Endangered Species Act section 10(a)(1)(B) incidental take permit for the Chandler's Sand and Gravel Project. Please carefully review the permit. The permit takes effect February 5, 2019, and expires on February 4, 2029. Acceptance of the permit acknowledges your commitment to comply with the conditions of the permit.

Thank you for helping to conserve the federally endangered least Bell's vireo (*Vireo bellii pusillus*). We look forward to assisting you in implementing the habitat conservation plan.

If you have any questions about this permit, please contact Jonathan Snyder at 760-431-9440, extension 307.

Sincerely,

SCOTT SOBIECH
Digitally signed by SCOTT SOBIECH
Date: 2019.02.06 05:49:01 -08'00'

Scott A. Sobiech
Acting Field Supervisor

Enclosure

NATIVE ENDANGERED SPECIES - HABITAT CONSERVATION PLAN
ENDANGERED WILDLIFE; MIGRATORY BIRDS

Permit Number: TE22477D-0

Effective: 2/5/2019 Expires: 2/4/2029

Issuing Office:

Department of the Interior
U.S. FISH & WILDLIFE SERVICE
Endangered Species Permit Office
2800 Cottage Way, Suite W-2606
Sacramento, CA 95825-1846
permitsR8ES@fws.gov

SCOTT SOBIECH
Digitally signed by SCOTT SOBIECH
Date: 2019.02.05 14:26:13 -08'00'

Acting *FIELD OFFICE SUPERVISOR*

Permittee:

OC RECLAMATION LLC
17392 DAIMLER STREET
IRVINE, CA 92614
U.S.A.

Name and Title of Principal Officer:
JOHN ROBERTSON - PRESIDENT

Authority: Statutes and Regulations: 16 USC 1539(a), 16 USC 703-712; 50 CFR 17.22, 50 CFR 21.23, 50 CFR 21.27, 50 CFR 13.

Location where authorized activity may be conducted:
City of Orange, Orange County, Califronia

Reporting requirements:
See permit conditions for reporting requirements

Authorizations and Conditions:

A. General conditions set out in Subpart B of 50 CFR 13, and specific conditions contained in Federal regulations cited above, are hereby made a part of this permit. All activities authorized herein must be carried out in accordance with and for the purposes described in the application submitted. Continued validity, or renewal of this permit is subject to complete and timely compliance with all applicable conditions, including the filing of all required information and reports.

B. The validity of this permit is also conditioned upon strict observance of all applicable foreign, state, local tribal, or other federal law.

C. Valid for use by permittee named above.

D A designated Project Biologist (the Project Biologist will be familiar with vireo and its habitat) approved by the Service will monitor construction activities to ensure that all avoidance and minimization measures are properly followed. The Applicant will submit the biologist's name, address, telephone number, and work schedule on the project to the Service prior to initiating project impacts. The Project Biologist will be provided with a copy of the incidental take permit for the Project and will attend all preconstruction meetings, be present during all vegetation clearing activities, monitor construction activities during phase one on a weekly basis, and monitor activities during phase two on a monthly basis.

E. The Project Biologist will halt work if necessary to avoid potential unanticipated impacts to vireo or its habitat and will confer with the Service as necessary to ensure the proper implementation of species and habitat protection measures. The Project Biologist will report any non-compliance issue to the Service within one business day of observing the issue.

F. All construction personnel that will be involved in the onsite project construction will be required to participate in a pre-construction environmental training program provided by the Project Biologist to understand basic ecology of federally listed species potentially present in or adjacent to the project footprint, laws, penalties for violations, avoidance/minimization obligations, concerns, and the communication path if an issue arises on the project.

G. Prior to construction, under the supervision of the Project Biologist, highly visible barriers (e.g., orange construction fencing) will be installed along the construction boundary adjacent to native habitat to identify Project impact and avoidance areas. Construction fencing and markers will be maintained in good repair until the completion of project construction and removed upon project completion. No project activity of any type, including storage of equipment or supplies, structures, and use of motor vehicles and heavy equipment, will be permitted within Project avoidance areas. Silt fence barriers will be installed at the edge of the construction boundary to prevent accidental deposition of fill material in areas where vegetation is immediately adjacent to planned grading activities.

H. The clearing and grubbing of riparian vegetation will take place outside the vireo nesting season (March 15 through September 15).

I. Construction site Best Management Practices (BMPs) outlined in the project's Storm Water Pollution Prevention Plan (SWPPP) will be implemented to avoid and minimize erosion, sedimentation, and pollution from entering native habitat.

J. Invasive plant species (i.e., plant species listed in the California Invasive Plant Council [Cal- IPC] California Invasive Plant Inventory with a High or Moderate rating) will be removed from the project work area and controlled during construction.

K. If nighttime construction is necessary, all project lighting (e.g., staging areas, equipment storage sites, roadway) will be selectively placed and directed toward the construction site and away from adjacent habitats. Construction lighting will be of the lowest illumination necessary for safety, and light glare shields will be used to reduce the extent of illumination into adjacent habitats.

L. Trash will be stored in closed containers, will not be readily accessible to scavengers, and will be emptied when full.

M. Dust control measures will be implemented by the contractor to reduce excessive dust emissions. Dust control measures will be carried out at least two times per day during periods of grading or other activities that would disturb soils, and may include wetting work areas, the use of soil binders on dirt roads, and wetting or covering stockpiles.

N. Fire suppression capability will be available onsite whenever construction occurs during the fire season. Fire suppression equipment will be located on all pieces of equipment during fire season, red flag warnings, and in areas that have a high fire risk (i.e., dry brush).

O. The Applicant will submit a final report to the Service within 120 days of completing both phase one and phase two of the project, including photographs of impact areas and adjacent habitat, documentation that authorized impacts were not exceeded, and documentation that general compliance with all conservation measures was achieved.

P. To offset the project-related permanent impacts to 2.0 acres of occupied riparian habitat, the Applicant will fund the creation of 1.48 acres of riparian vegetation on site, enhancement of 1.88 acres on site, and enhancement of 2.53 acres off site. All of the restored habitat will be conserved and managed in perpetuity. Prior to project initiation, the Applicant will implement the following measures related to the proposed restoration:

a. Complete a restoration plan that is reviewed and approved by the Service and identifies the specific locations where the restoration will occur, timeline for implementation, methodology to implement the proposed restoration, and quantitative performance criteria that will be achieved for the restoration to be determined successful.

b. Prior to the start of construction, establish a performance bond that is reviewed and approved the Service that will provide sufficient funding to ensure completion of both onsite and offsite restoration.

c. Complete long-term management plans for the onsite and offsite restoration that are reviewed and approved by the Service and that describe the management actions that will be taken to ensure that the restored habitat is protected and maintained in perpetuity. The long-term management plans will include an estimate of the cost to implement the plan in perpetuity.

d. Establish an endowment or other funding assurance approved by the Service to implement the long-term management plan in perpetuity. The long-term management funds will be held by an organization approved by the Service.

e. Submit a draft conservation easement for the onsite and offsite restoration areas for Service review and approval. The final conservation easement will be recorded within 1 year of project initiation to allow for minor changes in the boundary of the restoration sites following final grading.

Amount or Extent of Take

1. Take in the form of harm to up to two vireo pairs is expected due to the permanent removal of 2.0 acres of riparian habitat as described in the HCP. The take exemption will be exceeded if more than 2.0 acres of riparian habitat is cleared or graded.

Public Availability of Comments

All comments we receive become part of the public record associated with this action. Requests for copies of comments will be handled in accordance with the Freedom of Information Act, NEPA, and Service and Department of the Interior policies and procedures. Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public disclosure in their entirety.

Authority

We provide this notice under section 10(c) of the ESA and ESA implementing regulations (50 CFR 17.22 and 17.32) and NEPA (42 U.S.C. 4371 *et seq.*) and it's implementing regulations (40 CFR 1506.6).

Dated: August 20, 2018.

James Broska,

Acting Deputy Regional Director, Southwest Region, Albuquerque, New Mexico.

[FR Doc. 2018–18809 Filed 8–29–18; 8:45 am]

BILLING CODE 4333–15–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[FWS–R8–ES–2018–N081; FXES11140800000–178–FF08ECAR00]

Habitat Conservation Plan for the Least Bell's Vireo; Categorical Exclusion for Chandler's Sand and Gravel Project, Orange, California

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of availability; request for comments.

SUMMARY: We, the U.S. Fish and Wildlife Service, have received an application from Chandler's Sand and Gravel, LLC for a 10-year incidental take permit for the endangered least Bell's vireo pursuant to the Endangered Species Act, as amended. We are requesting comments on the permit application and on our preliminary determination that the applicant's accompanying proposed habitat conservation plan (HCP) qualifies as low effect, eligible for a categorical exclusion under the National Environmental Policy Act. The basis for this determination is discussed in our environmental action statement (EAS) and associated low-effect screening form, which are also available for public review.

DATES: Written comments should be received on or before October 1, 2018.

ADDRESSES:

Submitting Comments: You may submit comments by one of the following methods. Please include ''OC Mine HCP'' at the beginning of your comments.

- *U.S. Mail:* Field Supervisor, Carlsbad Fish and Wildlife Office, U.S. Fish and Wildlife Service, 2177 Salk Avenue, Suite 250, Carlsbad, CA 92008.
- *Fax:* Field Supervisor, 760–431–9624.
- *Email: fw8cfwocomments@fws.gov.*

Obtaining Documents: You may obtain copies of the documents by the following methods:

- *Internet: https://www.fws.gov/carlsbad/HCPs/HCP_Docs.html.*
- *Telephone:* 760–431–9440.
- *U.S. Mail:* Carlsbad Fish and Wildlife Office (address above).
- *In-Person:* You may examine the documents by appointment during regular business hours at the Carlsbad Fish and Wildlife Office (address above). Please call to make an appointment (see **FOR FURTHER INFORMATION CONTACT**).

FOR FURTHER INFORMATION CONTACT: Ms. Karen Goebel, Assistant Field Supervisor, Carlsbad Fish and Wildlife Office, 760–431–9440. If you use a telecommunications device for the deaf (TDD), please call the Federal Relay Service (FRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION: We, the U.S. Fish and Wildlife Service (Service), have received an application from Chandler's Sand and Gravel, LLC (applicant) for a 10-year incidental take permit for one covered species pursuant to section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended (ESA; 16 U.S.C. 1531 *et seq.*). The application addresses the anticipated ''take'' of the endangered least Bell's vireo (*Vireo bellii pusillus;* vireo) associated with regrading a 14-acre property and filling an abandoned pit mine on site in the City of Orange, Orange County, California. A conservation program to avoid, minimize, and mitigate for project activities would be implemented as described in the applicant's proposed habitat conservation plan (HCP).

We are requesting comments on the permit application and on our preliminary determination that the proposed HCP qualifies as a low-effect HCP, eligible for a categorical exclusion under the National Environmental Policy Act of 1969, as amended (NEPA; 42 U.S.C. 4321 *et seq.*). The basis for this determination is discussed in our EAS and associated low-effect screening form, which are also available for public review.

Background

Section 9 of the ESA and its implementing Federal regulations prohibit the take of animal species listed as endangered or threatened. ''Take'' is defined under the ESA as to ''harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect [listed animal species], or to attempt to engage in such conduct'' (16 U.S.C. 1538). ''Harm'' includes significant habitat modification or degradation that actually kills or injures listed wildlife by significantly impairing essential behavioral patterns such as breeding, feeding, or sheltering (50 CFR 17.3). However, under section 10(a) of the ESA, the Service may issue permits to authorize incidental take of listed species. ''Incidental taking'' is defined by the ESA implementing regulations as taking that is incidental to, and not the purpose of, carrying out an otherwise lawful activity (50 CFR 17.3). Regulations governing incidental take permits for endangered and threatened species, respectively, are found in the Code of Federal Regulations at 50 CFR 17.22 and 50 CFR 17.32.

Applicant's Proposed Project

The project is located on a 14-acre property in the City of Orange in Orange County, California. The applicant requests a 10-year permit under section 10(a)(1)(B) of the ESA. If we approve the permit, the applicant anticipates taking vireo as a result of permanent impacts to 2.0 acres of riparian woodland that the species uses for breeding, feeding, and sheltering. The take would be incidental to the applicant's activities associated with the regrading of the property and filling the abandoned pit mine on site.

The applicant proposes to mitigate permanent impacts to 2.0 acres of occupied vireo habitat through the creation of 1.48 acres and enhancement of 1.88 acres of vireo habitat on site and enhancement of 2.53 acres of vireo habitat off site. All of the created and enhanced habitat will be conserved and managed in perpetuity.

The applicant's proposed HCP also contains measures to minimize the effects of construction activities on the vireo, including the following:

Oversight of project activities by a biological monitor; fencing the project limits; removing vegetation outside the vireo nesting season; implementing a Storm Water Pollution Prevention Plan to avoid and minimize erosion, sedimentation, and pollution in adjacent native habitat; removing invasive plant species from the project work area; minimizing the use of project lighting; storing and removing trash; controlling dust; ensuring that fire suppression equipment at all times; and monitoring and reporting to the Service upon project completion.

Proposed Action and Alternatives

The Proposed Action consists of the issuance of an incidental take permit and implementation of the proposed HCP, which includes measures to avoid, minimize, and mitigate impacts to the vireo. If we approve the permit, take of vireo would be authorized for the applicant's activities associated with the implementation of the OC Reclamation Mine project. In the proposed HCP, the applicant considers the No Action Alternative. Under the No Action Alternative, no incidental take of least Bell's vireo resulting from habitat modification would occur, and no long-term protection and management would be afforded to the species. The No Action Alternative would not meet the primary goal of the proposed Project, which is serve as a receiver site for excess fill and to fill the abandoned pit mine. Because the abandoned pit mine contains the habitat supporting the vireo, it is not possible to implement the project and avoid incidental take of vireo.

Our Preliminary Determination

The Service has made a preliminary determination that approval of the HCP and issuance of an incidental take permit qualify for categorical exclusion under NEPA (42 U.S.C. 4321 *et seq.*), as provided by the Department of the Interior implementing regulations in part 46 of title 43 of the Code of Federal Regulations (43 CFR 46.205, 46.210, and 46.215), and that the HCP qualifies as a low-effect plan as defined by the Habitat Conservation Planning Handbook (December 2016).

We base our determination that a HCP qualifies as a low-effect plan on the following three criteria:

(1) Implementation of the HCP would result in minor or negligible effects on federally listed, proposed, and candidate species and their habitats;

(2) Implementation of the HCP would result in minor or negligible effects on other environmental values or resources; and

(3) Impacts of the HCP, considered together with the impacts of other past, present, and reasonably foreseeable similarly situated projects, would not result, over time, in cumulative effects to environmental values or resources that would be considered significant.

Based upon this preliminary determination, we do not intend to prepare further NEPA documentation. We will consider public comments in making the final determination on whether to prepare such additional documentation.

Next Steps

We will evaluate the proposed HCP and comments we receive to determine whether the permit application meets the requirements and issuance criteria under section 10(a) of the ESA (16 U.S.C. 1531 *et seq.*). We will also evaluate whether issuance of a section 10(a)(1)(B) incidental take permit would comply with section 7 of the ESA by conducting an intra-Service consultation. We will use the results of this consultation, in combination with the above findings, in our final analysis to determine whether or not to issue a permit. If the requirements and issuance criteria under section 10(a) are met, we will issue the permit to the applicant for incidental take of vireo.

Public Availability of Comments

Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Authority

We provide this notice under section 10 of the ESA (16 U.S.C. 1531 *et seq.*) and NEPA regulations (40 CFR 1506.6).

G. Mendel Stewart,

Field Supervisor, Carlsbad Fish and Wildlife Office, Carlsbad, California.

[FR Doc. 2018–18908 Filed 8–29–18; 8:45 am]

BILLING CODE 4333–15–P

DEPARTMENT OF THE INTERIOR

Office of the Secretary

[189D0102DM DLSN00000.000000 DS61200000 DX61201; OMB Control Number 1090–0011]

Agency Information Collection Activities; Submission to the Office of Management and Budget for Review and Approval; DOI Generic Clearance for the Collection of Qualitative Feedback on Agency Service Delivery

AGENCY: Office of the Secretary, Interior.

ACTION: Notice of information collection; request for comment.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995, we, the Office of the Secretary are proposing to renew an information collection.

DATES: Interested persons are invited to submit comments on or before October 1, 2018.

ADDRESSES: Send written comments on this information collection request (ICR) to the Office of Management and Budget's Desk Officer for the Department of the Interior by email at *OIRA_Submission@omb.eop.gov;* or via facsimile to (202) 395–5806. Please provide a copy of your comments to Jeffrey Parrillo, 1849 C Street NW, Washington, DC 20240; or by email to *jeffrey_parrillo@ios.doi.gov.* Please reference OMB Control Number 1090–0011 in the subject line of your comments.

FOR FURTHER INFORMATION CONTACT: To request additional information about this ICR, contact Jeffrey Parrillo, 1849 C Street NW, Washington, DC 20240; or by email to *jeffrey_parrillo@ios.doi.gov.* You may also view the ICR at *http://www.reginfo.gov/public/do/PRAMain.*

SUPPLEMENTARY INFORMATION: In accordance with the Paperwork Reduction Act of 1995, we provide the general public and other Federal agencies with an opportunity to comment on new, proposed, revised, and continuing collections of information. This helps us assess the impact of our information collection requirements and minimize the public's reporting burden. It also helps the public understand our information collection requirements and provide the requested data in the desired format.

A **Federal Register** notice with a 60-day public comment period soliciting comments on this collection of information was published on March 22, 2018 (83 FR 12590). No comments were received.

We are again soliciting comments on the proposed ICR that is described

Attachment F:

CDFW Email

Subject: RE: OC Reclamation
Date: Tuesday, February 26, 2019 at 3:39:53 PM Pacific Standard Time
From: Turner, Jennifer@Wildlife
To: abrodkin@cityoforange.org
CC: jeff johnson, 'colleen_draguesku@fws.gov'

Hello Ms. Brodkin,

Per our phone discussion, I can confirm that the applicant has been coordinating and scoping this project with the Department since October 2016. During the scoping process, the Department concurred that pursuing an Incidental Take Permit under the California Endangered Species Act (CESA; Fish and Game Code §2050 *et seq.)* for least Bell's vireo *(Vireo bellii pusillus*; CESA- and federal ESA-listed Endangered) would be unnecessary if the applicant could implement avoidance measures which would negate the possibility of take, such as clearing riparian vegetation outside of vireo nesting season. Coastal California gnatcatcher *(Polioptila californica californica),* which is a state species of special concern and ESA listed-threatened, is located in the upland portions of the project area. Impacts gnatcatcher are the purview of the US Fish and Wildlife Service, and this species is not covered under CESA.

At no time did the Department authorize take of vireo in association with project activities, nor does this email authorize take for vireo under CESA.

I have also attached the Department's letter which states that the applicant, who did meet their obligation to apply for a Streambed Alteration Agreement per Fish and Game Code section 1600 et *seq.*, does not require such an Agreement to move forward with project activities.

If there is any other information I can provide regarding this or any other Orange County projects, you can contact me directly.

Sincerely,

Jennifer Turner
Environmental Scientist
California Department of Fish and Wildlife
3883 Ruffin Road
San Diego, CA 92123
(858)467-2717
Jennifer.Turner@wildlife.ca.gov

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www.firewood.ca.gov

Save Our Water

SaveOurWater.com · Drought.CA.gov

From: jeff johnson <jeff@pacificbioscience.com>
Sent: Tuesday, February 26, 2019 2:05 PM
To: Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>
Cc: abrodkin@cityoforange.org
Subject: Re: OC Reclamation

Hi Jennifer,

I have cc'd Ashley Brodkin on this email so you two can coordinate directly.

Thanks,

Jeff

From: "Turner, Jennifer@Wildlife" <Jennifer.Turner@wildlife.ca.gov>
Date: Fri, 22 Feb 2019 17:54:00 +0000
To: jeff johnson <jeff@pacificbioscience.com>
Subject: RE: OC Reclamation

Hi Jeff,

If you provide me with Ashley's contact info, I'll coordinate with her directly.

Happy Friday,

Jennifer Turner
Environmental Scientist
California Department of Fish and Wildlife
3883 Ruffin Road
San Diego, CA 92123
(858)467-2717
Jennifer.Turner@wildlife.ca.gov

Prevent the spread of destructive tree pests!
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Find out more, including local sources of firewood, at:
www.firewood.ca.gov

Save Our Water

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From: jeff johnson <jeff@pacificbioscience.com>
Sent: Friday, February 22, 2019 9:49 AM
To: Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>
Subject: OC Reclamation

Hi Jennifer:

As you may know, Colleen recently issued us the ITP for LBV for referenced project. We have paid the mitigation fees for impacts to CAGN as well and you may have received a copy of those documents.

The City of Orange, Ashley, wishes to have a statement or letter from you stating that we have satisfied our requirements under CESA or at least a letter stating that we have coordinated with your office. Is there anything you can do to help with this? Thanks for your help.

Jeff Johnson
Pacific BioScience, Inc.
(805) 750-3474

Attachment G:

USACE Letters

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, LOS ANGELES DISTRICT
915 WILSHIRE BOULEVARD, SUITE 930
LOS ANGELES, CALIFORNIA 90017

June 19, 2020

SUBJECT: Approved Jurisdictional Determination

John Robertson
Chandler Sand and Gravel, LLC
17392 Daimler Street
Irvine, California 92614

Dear Mr. Robertson:

I am responding to your request (File No. SPL-2020-00084) dated May 18, 2020, for an approved Department of the Army jurisdictional determination (JD) for the Chandler Sand and Gravel Orange Mine project site, located within the city and County of Orange, California (lat. 33.812887°N, long. -117.797009°W).

The Corps' evaluation process for determining whether or not a Department of the Army permit is needed involves two tests. If both tests are met, a permit would likely be required. The first test determines whether or not the proposed project is located within the Corps' geographic jurisdiction (i.e., it is within a water of the United States). The second test determines whether or not the proposed project is a regulated activity under Section 10 of the Rivers and Harbors Act or Section 404 of the Clean Water Act. This evaluation pertains only to geographic jurisdiction.

Based on available information, I have determined waters of the United States do not occur on the project site. The basis for our determination can be found in the enclosed Approved Jurisdictional Determination (JD) form(s).

This letter includes an approved jurisdictional determination for the Chandler Sand and Gravel Orange Mine project site. If you wish to submit new information regarding this jurisdictional determination, please do so within 60 days. We will consider any new information so submitted and respond within 60 days by either revising the prior determination, if appropriate, or reissuing the prior determination. If you object to this or any revised or reissued jurisdictional determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) and Request for Appeal (RFA) form. If you wish to appeal this decision, you must submit a completed RFA form within 60 days of the date on the NAP to the Corps South Pacific Division Office at the following address:

Tom Cavanaugh
Administrative Appeal Review Officer
U.S. Army Corps of Engineers
South Pacific Division, CESPD-PDO
450 Golden Gate Ave.
San Francisco, CA 94102

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5 (see below), and that it has been received by the Division Office by **August 18, 2020**.

This determination has been conducted to identify the extent of the Corps' Clean Water Act jurisdiction on the particular project site identified in your request, and is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

Thank you for participating in the regulatory program. If you have any questions, please contact me at (213) 452-3417 or via e-mail at Gerardo.Salas@usace.army.mil. Please help me to evaluate and improve the regulatory experience for others by completing the customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Sincerely,

SALAS.GERARDO.1260676870
Digitally signed by SALAS.GERARDO.1260676870
Date: 2020.06.19 17:31:22 -07'00'

Gerardo Salas
Senior Project Manager
Orange & Riverside Counties Section
South Coast Branch
Regulatory Division

Enclosure(s)

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL		
Applicant: Chandler Sand and Gravel, LLC	File Number: SPL-2020-00084	Date: JUNE 17, 2020
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/cecw/pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Gerardo Salas
U.S. Army Corps of Engineers
Los Angeles District
915 WILSHIRE BOULEVARD, SUITE 930
LOS ANGELES, CALIFORNIA 90017

Phone: (213) 452-3417
Email: Gerardo.Salas@usace.army.mil

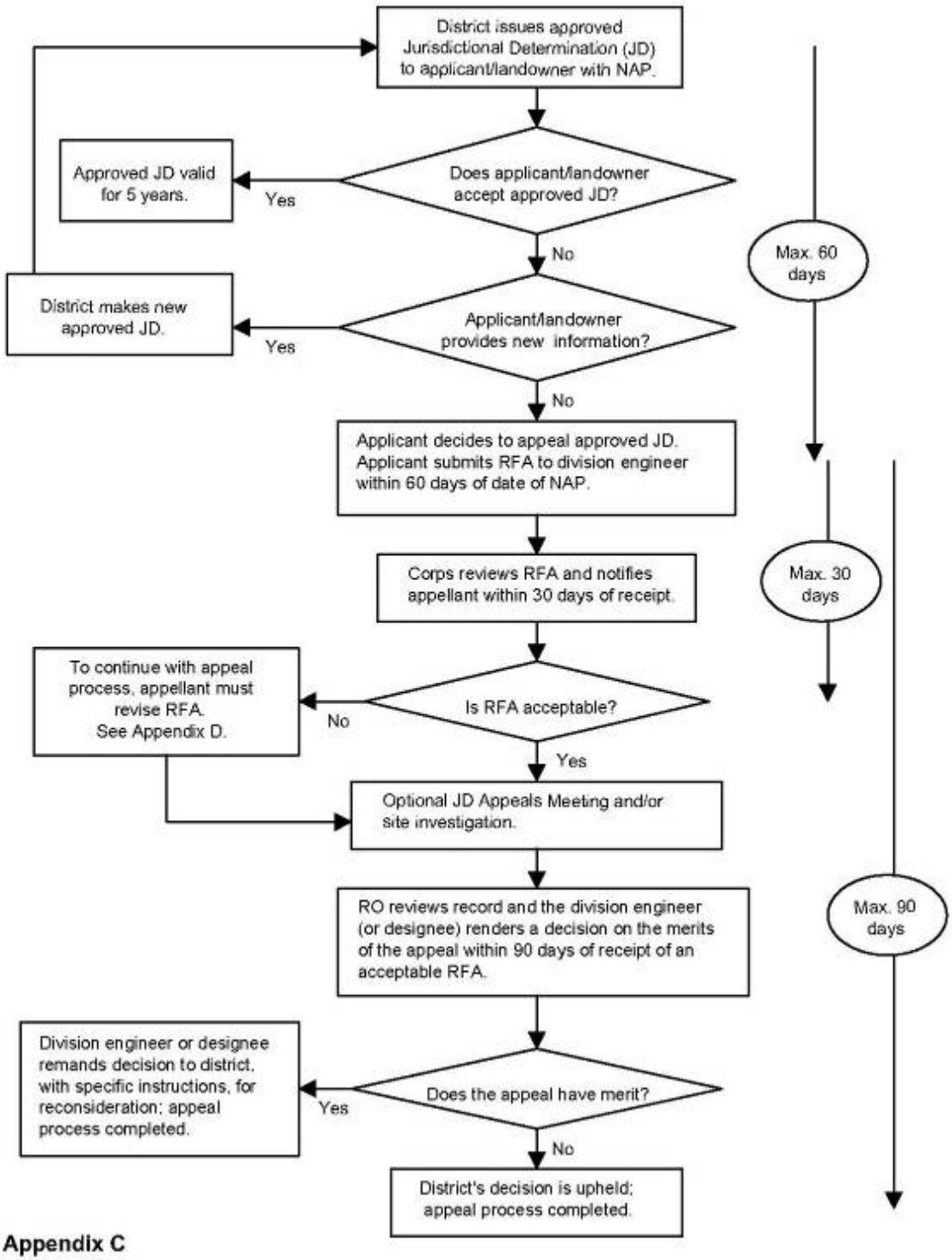
If you only have questions regarding the appeal process you may also contact: Thomas J. Cavanaugh

Administrative Appeal Review Officer
U.S. Army Corps of Engineers
South Pacific Division
450 Golden Gate Ave.
San Francisco, CA 94102
Phone: (415) 503-6574 Fax: (415) 503-6646
Email: thomas.j.cavanaugh@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

Administrative Appeal Process for Approved Jurisdictional Determinations



Appendix C

§ 331.5 Criteria.

(a) *Criteria for appeal* —(1) *Submission of RFA.* The appellant must submit a completed RFA (as defined at §331.2) to the appropriate division office in order to appeal an approved JD, a permit denial, or a declined permit. An individual permit that has been signed by the applicant, and subsequently unilaterally modified by the district engineer pursuant to 33 CFR 325.7, may be appealed under this process, provided that the applicant has not started work in waters of the United States authorized by the permit. The RFA must be received by the division engineer within 60 days of the date of the NAP.

(2) *Reasons for appeal.* The reason(s) for requesting an appeal of an approved JD, a permit denial, or a declined permit must be specifically stated in the RFA and must be more than a simple request for appeal because the affected party did not like the approved JD, permit decision, or the permit conditions. Examples of reasons for appeals include, but are not limited to, the following: A procedural error; an incorrect application of law, regulation or officially promulgated policy; omission of material fact; incorrect application of the current regulatory criteria and associated guidance for identifying and delineating wetlands; incorrect application of the Section 404(b)(1) Guidelines (see 40 CFR Part 230); or use of incorrect data. The reasons for appealing a permit denial or a declined permit may include jurisdiction issues, whether or not a previous approved JD was appealed.

(b) *Actions not appealable.* An action or decision is not subject to an administrative appeal under this part if it falls into one or more of the following categories:

(1) An individual permit decision (including a letter of permission or a standard permit with special conditions), where the permit has been accepted and signed by the permittee. By signing the permit, the applicant waives all rights to appeal the terms and conditions of the permit, unless the authorized work has not started in waters of the United States and that issued permit is subsequently modified by the district engineer pursuant to 33 CFR 325.7;

(2) Any site-specific matter that has been the subject of a final decision of the Federal courts;

(3) A final Corps decision that has resulted from additional analysis and evaluation, as directed by a final appeal decision;

(4) A permit denial without prejudice or a declined permit, where the controlling factor cannot be changed by the Corps decision maker (e.g., the requirements of a binding statute, regulation, state Section 401 water quality certification, state coastal zone management disapproval, etc. (See 33 CFR 320.4(j));

(5) A permit denial case where the applicant has subsequently modified the proposed project, because this would constitute an amended application that would require a new public interest review, rather than an appeal of the existing record and decision;

(6) Any request for the appeal of an approved JD, a denied permit, or a declined permit where the RFA has not been received by the division engineer within 60 days of the date of the NAP;

(7) A previously approved JD that has been superceded by another approved JD based on new information or data submitted by the applicant. The new approved JD is an appealable action;

(8) An approved JD associated with an individual permit where the permit has been accepted and signed by the permittee;

(9) A preliminary JD; or

(10) A JD associated with unauthorized activities except as provided in §331.11.

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): June 17, 2020

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Los Angeles District, Chandler's Sand and Gravel Orange Mine, SPL-2020-00084

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: California County/parish/borough: Orange City: Orange
Center coordinates of site (lat/long in degree decimal format): Lat. 33.812676° **N**, Long. -117.797290° **E**.
Universal Transverse Mercator: Zone 11
Name of nearest waterbody: Santiago Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Pacific Ocean
Name of watershed or Hydrologic Unit Code (HUC): Santa Ana River

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: June 8, 2020
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Pick List**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: .

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **Pick List**
Drainage area: **Pick List**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

☐ Silts	☒ Sands	☐ Concrete
☐ Cobbles	☒ Gravel	☐ Muck
☐ Bedrock	☒ Vegetation. Type/% cover:	
☐ Other. Explain: .		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☐ destruction of terrestrial vegetation
☐ shelving	☐ the presence of wrack line
☐ vegetation matted down, bent, or absent	☐ sediment sorting
☐ leaf litter disturbed or washed away	☐ scour
☐ sediment deposition	☐ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community
☐ other (list):	

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:	☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list):	

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☒ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: **300** linear feet **30** width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

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[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☒ Other: (explain, if not covered above): **The approximate 14 acre project site was an open sand and gravel mine for decades prior to operations ceasing in the 1960's. An earthen berm would be created near the northern boundary separating Santiago Creek from the balance of the site. Commercial development occurs to the west and disturbed open space further to the east across Cannon Street. The proposed project site is surrounded by development or disturbed open space.**

The Project is within a semi-arid region, and therefore there is little natural perennial surface water. As a result of the variability of rainfall, surface hydrology of the mine site is dominated by ephemeral washes, flowing only during storm events and remaining dry for most of the year. The hydrologic regime for the area follows the general Mediterranean climate, with cool, wet winters and warm, dry summers, but is also occasionally influenced by summer monsoons. The average rainfall for the project site is approximately 13 inches annually with most of the rainfall occurring December to March. Furthermore urban runoff contributes to the hydrologic regime.

Chandler's Sand and Gravel Orange mine occurred in dry land. Because the mining operations "occurred in dry land incidental to mining, the Corps concurs that the pond feature is a water-filled depression likely created in dry land incidental to mining activity, and so does not meet the definition of "waters of the U.S.," even though it may otherwise exhibit indications of such. Consequently, the Orange Mine Pond feature is not considered to be a waters of the U.S. [33 CFR 328.3(b)(4)(v); 51 FR 41250, November 13, 1986, as amended at 58 FR 45036, August 25, 1993; 80 FR 37104, June 29, 2015]. Therefore, no Department of the Army permit will be required to discharge dredged or fill material into the Mining Pond".

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☒ Lakes/ponds: 14 acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☒ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☐ U.S. Geological Survey Hydrologic Atlas: .
☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name: 2012. Orange, California 7.5-Minute Topographic Quadrangle Map.

☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date):Trevor Wood of Chandler's Sand & Gravel, LLC, October 2016.
or ☐ Other (Name & Date): .
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: The approximate 14 acre project site was an open sand and gravel mine for decades prior to operations ceasing in the 1960's. An earthen berm would be created near the northern boundary separating Santiago Creek from the balance of the site. Commercial development occurs to the west and disturbed open space further to the east across Cannon Street. The proposed project site is surrounded by development or disturbed open space.

The Project is within a semi-arid region, and therefore there is little natural perennial surface water. As a result of the variability of rainfall, surface hydrology of the mine site is dominated by ephemeral washes, flowing only during storm events and remaining dry for most of the year. The hydrologic regime for the area follows the general Mediterranean climate, with cool, wet winters and warm, dry summers, but is also occasionally influenced by summer monsoons. The average rainfall for the project site is approximately 13 inches annually with most of the rainfall occurring December to March. Furthermore urban runoff contributes to the hydrologic regime.

Chandler's Sand and Gravel Orange mine occurred in dry land. Because the mining operations "occurred in dry land incidental to mining, the Corps concurs that the pond feature is a water-filled depression likely created in dry land incidental to mining activity, and so does not meet the definition of "waters of the U.S.," even though it may otherwise exhibit indications of such. Consequently, the Orange Mine Pond feature is not considered to be a waters of the U.S. [33 CFR 328.3(b)(4)(v); 51 FR 41250, November 13, 1986, as amended at 58 FR 45036, August 25, 1993; 80 FR 37104, June 29, 2015]. Therefore, no Department of the Army permit will be required to discharge dredged or fill material into the Mining Pond."
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DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, LOS ANGELES DISTRICT
915 WILSHIRE BOULEVARD, SUITE 930
LOS ANGELES, CALIFORNIA 90017

June 19, 2020

SUBJECT: Determination of Need for Department of the Army Permit

John Robertson
Chandler Sand and Gravel, LLC
17392 Daimler Street
Irvine, California 92614

Dear Mr. Robertson:

I am responding to your request (File No. SPL-2020-00084) dated May 18, 2020, for clarification whether a Department of the Army Permit is required for the Chandler Sand and Gravel Orange Mine project site, located within the city and County of Orange, California (lat. 33.812887°N, long. -117.797009°W).

The Corps' evaluation process for determining if you need a permit is based on whether or not the proposed project is located within or contains a water of the United States, and whether or not the proposed project includes an activity potentially regulated under Section 10 of the Rivers and Harbors Act or Section 404 of the Clean Water Act. If both conditions are met, a permit would be required.

Based on the previously mailed approved jurisdictional determination dated June 17, 2020, it appears the Chandler Sand and Gravel Orange Mine project site does not contain water(s) of the United States pursuant to 33 CFR Part 325.9.

However, I have determined the proposed work would not involve a discharge of dredged or fill material and therefore, would not be regulated under Section 404 of the Clean Water Act if the activity is performed in the manner described in your application. Notwithstanding this determination, your proposed project may be regulated under other Federal, State, and local laws.

If you have any questions, please contact me at (213) 452-3417 or via email at Gerardo.Salas@usace.army.mil.

Sincerely,

SALAS.GERARDO.1260676870

Digitally signed by SALAS.GERARDO.1260676870
Date: 2020.06.19 17:29:25 -07'00'

Gerardo Salas
Senior Project Manager
Orange & Riverside Counties Section
South Coast Branch
Regulatory Division

Enclosure(s)

Attachment H:

CDFW Letter

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
South Coast Region
3883 Ruffin Road
San Diego, California 92123
(858) 467-4201
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director

November 18, 2016

Jeff Baran
OC Reclamation, LLC
P.O. Box 15450
Irvine, California 92623

Subject: No Lake or Streambed Alteration Agreement Needed
Notification No. 1600-2016-0240-R5
OC Reclamation

Dear Mr. Baran:

The California Department of Fish and Wildlife (Department) has reviewed your Lake or Streambed Alteration Notification (Notification). The Department has determined that your project will not substantially adversely affect an existing fish or wildlife resource within a lake or stream. As a result, you will not need a Lake or Streambed Alteration Agreement for your project. You are responsible for complying with all applicable local, state, and federal laws in completing your work. A copy of this letter and your notification with all attachments should be available at all times at the work site.

Please note that if you change your project so that it differs materially from the project you described in your original Notification, you will need to submit a new Notification and corresponding fee to the Department.

Thank you for notifying us of your project. If you have any questions, please contact me at (858) 467-4223 or kevin.hupf@wildlife.ca.gov.

Sincerely,

Kevin Hupf
Environmental Scientist

Attachment I:

Greenhouse Gas Emission Data

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: Sub-Area
Region: Orange (SC)
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	Total VMT	Trips	% of trips	# of Project Trips	Miles/trip	Project Miles	CO2_RUNEX	CO2 (tons/day)	CO2_IDLEX	CO2 (tons/day)	CO2_STREX	CO2 (tons/day)	CH4_RUNEX	CH4 (tons/day)	CH4_IDLEX	CH4 (tons/day)	CH4_STREX	CH4 (tons/day)	N2O_RUNE	N20 (tons/day)	N2O_IDLE	N2O (tons/day)	N2O_STRE	N2O (tons/day)	CO2e (tons/day)
Orange (SC)	2021	T6 Instate Other Class 6	Aggregate	Aggregate	Diesel	3994.613141	174634.77	46177.73	0.178388	10.70326385	3.781796505	40.47756583	1094.789655	0.485903732	2277.768914	0.075323046	0	0	0.001326183	5.91718E-08	0.013287612	4.39405E-07	0	0	0.172485	7.69594E-06	0.358863	1.18672E-05	0	0	
Orange (SC)	2021	T6 Instate Other Class 6	Aggregate	Natural Gas	Natural Gas	12.64120771	540.9472574	146.1324	0.000565	0.03387116	3.701762246	0.125382982	851.3664601	0.000117666	4362.627448	0.144266781	0	0	0.437780063	6.0505E-08	17.16981821	0.000567785	0	0	0.173557	2.3987E-08	0.88935	2.94097E-05	0	0	
Orange (SC)	2021	T6 Instate Tractor Class 6	Aggregate	Aggregate	Diesel	30.73940598	1592.181109	355.3475	0.001373	0.082363914	4.480630821	0.369042291	1081.961246	0.000440134	2370.904787	0.078402936	0	0	0.002381724	9.68868E-10	0.020745827	6.86039E-07	0	0	0.170463	6.93433E-08	0.373537	1.23524E-05	0	0	
Orange (SC)	2021	T6 Instate Tractor Class 6	Aggregate	Aggregate	Natural Gas	0.135589043	6.521707184	1.567409	6.06E-06	0.000363301	4.160819398	0.001511628	856.4437456	1.42706E-06	4387.763213	0.14509799	0	0	0.437354024	7.28744E-10	17.21093221	0.000569145	0	0	0.174592	2.90915E-10	0.894474	2.95792E-05	0	0	
Orange (SC)	2021	T6 Instate Tractor Class 7	Aggregate	Aggregate	Diesel	1170.020907	78711.73003	13525.44	0.05225	3.134982548	5.819531212	18.24412879	1035.768154	0.020829682	2311.016813	0.076422514	0	0	0.000990702	1.99234E-08	0.009654844	3.19274E-07	0	0	0.163186	3.28172E-06	0.364102	1.20404E-05	0	0	
Orange (SC)	2021	T6 Instate Tractor Class 7	Aggregate	Aggregate	Natural Gas	23.81996644	1664.970023	275.3588	0.001064	0.063823799	6.046547087	0.385913605	842.9292939	0.000358574	4383.515741	0.144957531	0	0	0.47676447	2.02811E-07	16.33422857	0.000540153	0	0	0.171837	7.30976E-08	0.893608	2.95505E-05	0	0	
Orange (SC)	2021	T6TS	Aggregate	Aggregate	Gasoline	7844.68263	437283.6243	156956.4	0.606333	36.3800028	2.786019534	101.3553984	1666.419848	0.186177963	548.5518281	0.018139941	45.41394179	0.003003568	0.009456352	1.0565E-06	0.268248409	8.87065E-06	0.043215817	2.85819E-06	0.018269	2.04108E-06	0.008048	2.66137E-07	0.033013	2.18342E-06	
Orange (SC)	2021	T7 Single Dump Class 8	Aggregate	Aggregate	Diesel	951.8387431	59469.89205	8966.321	0.034638	2.07825078	6.632585686	13.78417637	1632.200253	0.024799974	4626.751805	0.153001052	0	0	0.00159322	2.42077E-08	0.086215977	2.85106E-06	0	0	0.257154	3.90725E-06	0.728947	2.41054E-05	0	0	
Orange (SC)	2021	T7 Single Dump Class 8	Aggregate	Aggregate	Natural Gas	64.14711484	4469.401376	604.2658	0.002334	0.140059219	7.396415973	1.035936248	1266.461589	0.001446179	9277.842511	0.306806961	0	0	0.974575946	1.11287E-06	32.72687765	0.001082238	0	0	0.258176	2.94813E-07	1.891349	6.25446E-05	0	0	
Orange (SC)	2021	T7 Tractor Class 8	Aggregate	Aggregate	Diesel	2116.069516	183938.2786	30746.49	0.118776	7.126548029	5.982415496	42.63397136	1567.839797	0.073680817	8815.642392	0.291522566	0	0	0.001960693	9.2143E-08	0.157385548	5.20455E-06	0	0	0.247014	1.16084E-05	1.388908	4.59295E-05	0	0	
Orange (SC)	2021	T7 Tractor Class 8	Aggregate	Aggregate	Natural Gas	58.39304286	5417.327424	848.4509	0.003278	0.196657445	6.384962692	1.25565045	1234.312579	0.001708405	17111.09786	0.565843183	0	0	0.941395791	1.30298E-06	60.14018196	0.001988763	0	0	0.251623	3.4827E-07	3.488209	0.000115351	0	0	
Orange (SC)	2021	T7IS	Aggregate	Aggregate	Gasoline	12.89761328	666.7832283	258.0554	0.000997	0.059813154	2.583875819	0.154549761	2210.23575	0.000376534	0	0	55.31761145	0.003658572	0.245589145	4.18383E-08	0	0	9.36618E-05	6.19456E-09	0.240175	4.0916E-08	0	0	0.023571	1.55895E-06	
								258861.6	Project Trips					0.795841085		1.999784501		0.00666214		3.97465E-06		0.004766454		2.86438E-06		2.93851E-05		0.000372996		3.74237E-06	3.042645 tons/day
								60	daily																					240 days/year = annual trips/daily trips
								14400	annual																					730.2348 tons/year

No data is available on the actual population of vehicles which will service the project but assumes Class 6 and greater vehciles are used)
This analysis assumes all applicable vehicle classes that make trips to and from the project are represented in the same porportions as the county wide population
This analysis assumes all applicable vehicle classes that make trips to and from the project tracel the same distance per trip as the county wide population
This analysis assumes that each vehicle has one trip in and one trip out
Cells are direct output from EMFAC

Off-road

25,000	gals diesel per year	
10.2	kg CO2/gal	Table C-1, USEPA Greenhouse Gas Reporting Rule (40 CFR Part 98)
0.0004158	kg CH4/gal	Table C-2, USEPA Greenhouse Gas Reporting Rule (40 CFR Part 98)
0.0000828	kg N2O/ gal	Table C-2, USEPA Greenhouse Gas Reporting Rule (40 CFR Part 98)
282	tons CO2e /year	

Attachment J:

Hydrology/Hydraulics Report

FINAL HYDROLOGY/HYDRAULICS REPORT

SANTIAGO CREEK PIT PROJECT

City of Orange,
County of Orange, California

PREPARED FOR:

Chandlers Sand and Gravel
17392 Diamler St.
Irvine CA, 92614

July 24, 2019

PREPARED BY:

KWC Engineers
1880 Compton Avenue, Suite 100
Corona, CA 92881
Tel : (951) 734-2130
www.kwcengineers.com

Brandon Barnett, RCE 78472

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Section

1
INTRODUCTION

1.1 PURPOSE OF STUDY

The Santiago Creek Pit project is located northwest of the intersection of Cannon Street and Villa Park Road (see Appendix A), within the City of Orange. The purpose of this study is to hydrologically model the project developed condition onsite tributary watersheds for Phase 2 and determine the proposed peak stormwater runoffs. The hydrologic analysis was prepared using the Rational Method as specified in the Orange County Hydrology Manual. The flows determined in this report were used to size the above and below ground drainage facilities to support the Santiago Creek Pit project. The storm drain mainlines are proposed as being privately owned and maintained.

This report provides the supporting calculations for:

- Rational Method Hydrology for determining peak stormwater runoff
- Hydraulic calculations of proposed storm drain system for Rough Grading

1.2 PROJECT DESCRIPTION

The Santiago Creek Pit project phase 2 comprises approximately 15 acres of vacant land situated in the City of Orange bordering City of Villa Park. The site is located just south of Santiago Creek, west of Cannon Street, east of Oakridge Private School and north of Santiago Canyon Rd. The project site will be phased out to fill up the site to match surrounding grades.

The project site receives water from offsite watersheds. The offsite runoff comes from Cannon Street, E Santiago Canyon Road and 16 acres of vacant land on the other side of Cannon Street. This offsite flow from these three locations drains to a sump location on the east side of Cannon Street and then pipe flows to the west side of the street. This flow discharges onto 5 acres of vacant land that finds it way onto the north east corner of the project site. The onsite runoff from the project site along with all offsite runoff will be conveyed into proposed onsite storm drain system as shown on the Hydrology Key Maps (Appendix C). The onsite storm drain system picks up offsite runoff and pipe flows toward northwest side of project site. All onsite runoff is picked up in the northwest corner of the project site in a desilting basin. Both onsite and offsite runoff are piped to the northwest corner of the site and discharged into Santiago Creek. The onsite storm drain system has been sized to carry the ultimate condition 100-year discharge. See Hydrology Key Map (Appendix C) for the location of the storm drain lines and discharge points.

1.3 STUDY AREA

The project site is located within the Lower Santa Ana River Watershed, the largest watershed in Orange County. The existing tributary watersheds that drain onto the project site comprise mostly of natural undeveloped lands and public streets draining to Santiago Creek and eventually to Santiago Creek Recharging Basin south of Villa Park Road.

1.4 PROPOSED MASTER DRAINAGE FACILITIES

The area surrounding the Santiago Creek Pit project site area is not included in a Drainage Master Plan.

1.5 FLOODPLAIN MAPPING

The National Flood Insurance Act (1968) established the National Flood Insurance Program, which is based on the minimal requirements for floodplain management and is designed to minimize flood damage within Special Flood Hazard Areas. The Federal Emergency Management Agency (FEMA) is the agency which administrates the National Flood Insurance Program. Special Flood Hazard Areas (SFHA) are defined as areas that have a 1% chance of flooding within a given year. This is also referred to as the 100-year flood. Flood Insurance Rate Maps (FIRMs) were developed to identify areas of flood hazards within a community. According to the Flood Insurance Rate Map (FIRM) catalog, there are FIRMs produced by FEMA for the project site:

MAP Number: 06059C0166J & 06059C0158J

MAP Revised: December 3, 2009.

FIRM Map No. 06059C0166J & 06059C0158J (Appendix D) shows the flood zones designated for the Santiago Creek Pit project site. The project site is located within mapped Zone AE, which is an area determined to be inside the 1.0% annual chance floodplain (100-year). The filling of Santiago Creek Pit to proposed condition changes the limits of the floodplain and these changes can be seen in CLOMR report.

1.6 DESIGN CRITERIA

This analysis is based on the design criteria of the City of Orange and Orange County Local Drainage Manual.

Protection Levels:

1. The 100-year flood shall be contained with the street right-of-way limits.
2. The 10-year flood shall be contained within the top of curbs.
3. Building finished floor elevation shall be a minimum of 1 ft. above 100-year water surface elevation.
4. Catch basins and storm drain system shall be designed to convey 10-year flow.

Section

2

HYDROLOGIC DATA AND MODEL DEVELOPMENT

2.1 PROPOSED CONDITION MODEL

KWC delineated the proposed condition drainage areas according to the Phase 2 Santiago Creek Pit Rough Grading Plans (see Appendix J). This drainage study consists of one major drainage areas that includes onsite and offsite runoff from public streets, vacant land and graded areas. Offsite runoff will be picked up in inlets and storm drain pipes and conveyed to an existing storm drain that crosses Cannon Street. Runoff from the project site will be picked up in a similar fashion as offsite runoff, and will discharge into Santiago Creek on the northwest side of the site. The drainage collection and conveyance systems will be designed to convey the 100-year storm runoff.

Hydrologic soil data was obtained from the Orange County Hydrology Manual. Appendix B shows the soil hydrologic soil group distribution for the project tributary subareas. The drainage area boundaries consist of a soil type A and D.

The Orange County Rational Method Hydrologic calculations (as described in the OCHM) were performed using the CivilDesign Hydrology/Hydraulics computer program package 2005 by Bonadiman and Associates, Inc.

The developed land use (single family residential) condition associated with the proposed project will modify the hydrologic characteristics of the watershed by (1) increasing the amount of impervious area, (2) modifying existing drainage patterns, (3) increasing the hydraulic efficiency of the drainage conveyance system from natural drainage courses to improved underground storm drain systems, (4) reducing the time of peak flow, and (5) increasing the peak discharges.

Table 1 presents the results of the proposed condition 10-year, 25-year and 100-year rational method calculations at the downstream discharge points from drainage area A in Appendix C.

TABLE 1 – PROPOSED CONDITION
RATIONAL METHOD HYDROLOGY RESULTS

Drainage Area ID	Drainage Area ID	Drainage Area (ac)	10-Year (cfs)	100-Year (cfs)
A	D	91.75	119.7	189.1

2.2 SEDIMENT / DESILTING BASIN DESIGN

During construction the site will consist of one proposed sediment / desilting basins within the project boundary. The purpose of the basin is to control the erosion and trap sediment before it leaves the site. Temporary storm drain pipes will be constructed to convey 100-year 1-hour storm event runoff from one area to the next as necessary to safely convey runoff across the project site to discharge points along the project perimeter. Basins are sized according to State of California Water Resource Control Board and County of Riverside design guidelines.

The site's runoff will be detained and desilted in one basin prior to being discharged into a ¼ ton grouted rip rap channel. Outlet structure is designed for the 100-year 1-hour storm event per typical minimum flood protection criteria by Riverside County Flood Control criteria. This criterion is more stringent than the California Code of Regulation Section 3706 (CCR 3706) design criteria of 20-year 1-hour storm event. Refer to Appendix E for sediment/desilting basin sizing calculations.

Section

3
HYDRAULIC ANALYSIS

3.1 ONSITE STORM DRAIN SYSTEM

The onsite storm drain system will be privately owned and maintained. The hydraulic analysis and sizing of the storm drain system associated with the project was performed for the 100-year flow rates using the "Water Surface Pressure Gradient" (WSPG) computer program (see Appendix F for WSPG calculations). Storm Drain Pipes will be designed as reinforced concrete pipe (RCP) while maintaining the Hydraulic Grade Line (HGL) a minimum of 2 feet below the proposed finish surface, with a roughness coefficient of 0.013.

Drainage inlets are designed to accept the 100-year storm runoff. Refer to Proposed Condition Hydrology Key Map in Appendix C for the locations of each structure and Appendix G for onsite drainage systems.

3.2 OUTLET ANALYSIS

The project site will outlet at one location (see Hydrology Key Map). The project site outlet will connect directly to Santiago Creek. The storm drain system outlets down a riprap slope and into Santiago Creek.

Section

4
CONCLUSIONS

This hydrology and hydraulics report has evaluated the potential effects of runoff for the proposed project Santiago Creek Pit phase 2. In addition, the report has addressed the methodology used to analyze the proposed conditions, which was based on the Orange County Hydrology Manual. This section provides a summary discussion that evaluates the potential effects of the proposed project.

- The proposed drainage pattern is consistent with existing drainage pattern.
- Storm drain alignments and pipe sizes were adequately sized from the hydrology results and hydraulic calculations of the hydraulic grade line (HGL) for the 100-year storm event.
- The proposed onsite storm drains shall be privately maintained.
- Proposed alignment and pipe sizes of storm drain lines were presented.
- Proposed hydraulic grade lines and design discharges throughout the storm drain system are presented.

All storm water runoff will be conveyed via existing and onsite storm drain systems. The proposed stormwater facilities are designed for the 100-year storm event.

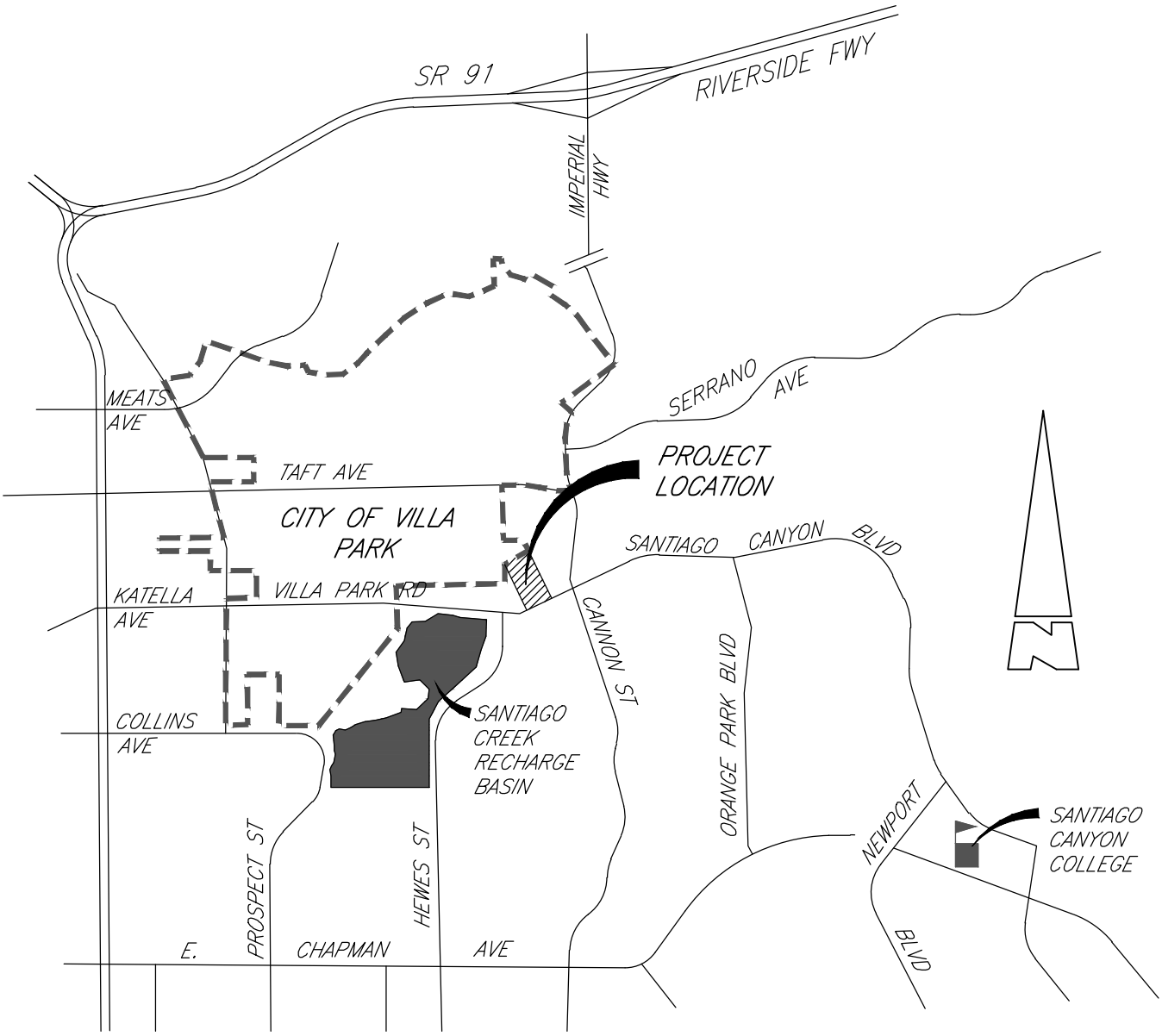
Section

5
REFERENCES

Orange County Flood Control District. *Hydrology Manual*. October 1986.

Appendix

A
VICINTY MAP



VICINITY MAP

N.T.S.

FIGURE 1

PREPARED BY:

KWC ENGINEERS

CIVIL ENGINEERS ● PLANNERS ● SURVEYORS
1880 COMPTON AVENUE, SUITE 100 ● CORONA, CA. 92881-3370 ● 951-734-2130

SANTIAGO CREEK PIT

VICINITY MAP

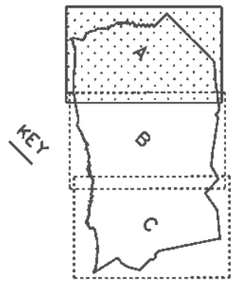
DATE	DRAWN BY	CHECKED BY	J.N.
7-24-19	CRA	BMB	15.1545.02

R:\15\1545\FINAL\REPORTS\HYDRO\Vicinity Map.dwg

Appendix

B

SOIL DATA



0 2000 4000 6000 8000
GRAPHIC SCALE 1"=2000'

SITE

ORANGE COUNTY
HYDROLOGY MANUAL

LEGEND
A B C D HYDROLOGIC SOIL GROUPS
HYDROLOGIC SOIL GROUP BOUNDARY

SOURCES:
BASE MAP - ORANGE COUNTY/RESOURCES & DEVELOPMENT MANAGEMENT DEPT GEOMATICS AND LAND INFORMATION SYSTEMS DIVISION
SOIL GROUPS - SOIL SURVEY OF ORANGE COUNTY AND WESTERN PART OF RIVERSIDE COUNTY, CALIFORNIA, USDA, SOIL CONSERVATION SERVICE, 1978.

HYDROLOGIC CLASSIFICATION OF SOILS
ORANGE COUNTY, CALIFORNIA
PLATE A

LEGEND

A B C D HYDROLOGIC SOIL GROUPS

HYDROLOGIC SOIL GROUP BOUNDARY

SOURCES:

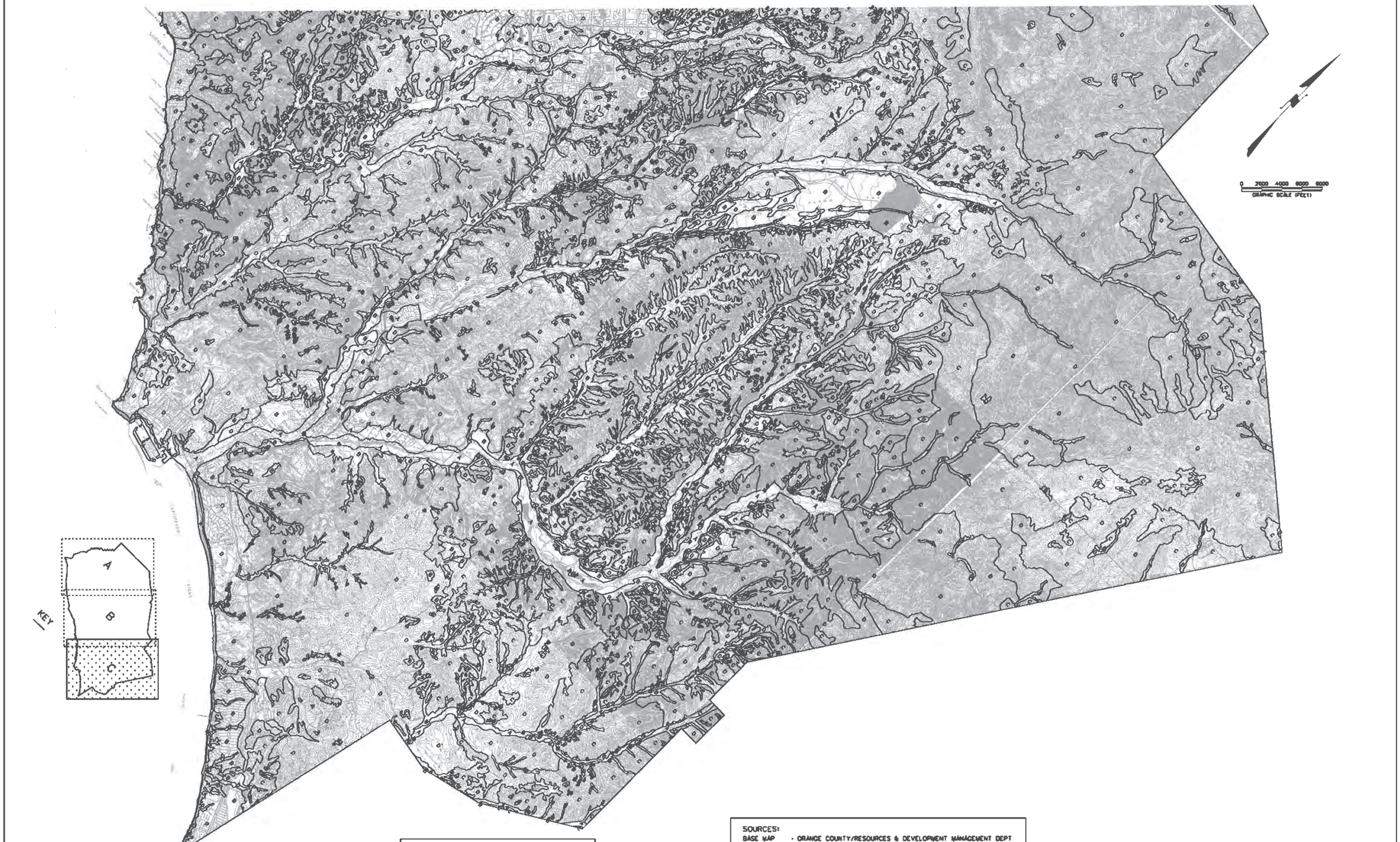
BASE MAP - ORANGE COUNTY/RESOURCES & DEVELOPMENT MANAGEMENT DEPT GEOMATICS AND LAND INFORMATION SYSTEMS DIVISION

SOIL GROUPS - SOIL SURVEY OF ORANGE COUNTY AND WESTERN PART OF RIVERSIDE COUNTY, CALIFORNIA, USDA, SOIL CONSERVATION SERVICE, 1978.

ORANGE COUNTY
HYDROLOGY MANUAL

HYDROLOGIC CLASSIFICATION OF SOILS
ORANGE COUNTY, CALIFORNIA

PLATE B



LEGEND

A B C D HYDROLOGIC SOIL GROUPS

HYDROLOGIC SOIL GROUP BOUNDARY

SOURCES:

BASE MAP - ORANGE COUNTY/RESOURCES & DEVELOPMENT MANAGEMENT DEPT GEOMATICS AND LAND INFORMATION SYSTEMS DIVISION

SOIL GROUPS - SOIL SURVEY OF ORANGE COUNTY AND WESTERN PART OF RIVERSIDE COUNTY, CALIFORNIA, USDA, SOIL CONSERVATION SERVICE, 1978.

ORANGE COUNTY
HYDROLOGY MANUAL

HYDROLOGIC CLASSIFICATION OF SOILS
ORANGE COUNTY, CALIFORNIA

PLATE C

Appendix

C

PROPOSED CONDITION HYDROLOGY ANALYSIS &DESIGN CONDITION KEY MAP

10 YEAR PROPOSED CONDITION

Orange County Rational Hydrology Program

(Hydrology Manual Date(s) October 1986 & November 1996)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2004 Version 8.0
Rational Hydrology Study, Date: 08/05/20 File Name: 1545D10A.roc

---

SANTIAGO CREEK
PROPOSED CONDITION
10-YR STORM
DRAINAGE AREA A

Program License Serial Number 6062

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 10.0

Decimal fraction of study above 2000 ft., 600M = 0.0000
English Units Used for input data

++

Process from Point/Station 1.000 to Point/Station 2.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fp)= 0.400(In/Hr)
Max Catchment Loss (Fm) = 0.040(In/Hr)
Initial subarea data:
Initial area flow distance = 300.000(Ft.)
Top (of initial area) elevation = 389.000(Ft.)
Bottom (of initial area) elevation = 386.600(Ft.)
Difference in elevation = 2.400(Ft.)
Slope = 0.00800 s(%)= 0.80
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.818 min.
Rainfall intensity = 3.142(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.889
Subarea runoff = 0.977(CFS)
Total initial stream area = 0.350(Ac.)

++

Process from Point/Station 2.000 to Point/Station 3.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****

Top of street segment elevation = 386.600(Ft.)
End of street segment elevation = 359.100(Ft.)
Length of street segment = 1578.000(Ft.)
Height of curb above gutter flowline = 8.0(In.)
Width of half street (curb to crown) = 42.000(Ft.)

```
Distance from crown to crossfall grade break  =  40.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.017
Slope from grade break to crown (v/hz)  =   0.017
Street flow is on [2] side(s) of the street
Distance from curb to property line  =   8.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.395(CFS)
Depth of flow =   0.303(Ft.), Average velocity =   2.732(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.027(Ft.)
Flow velocity =   2.73(Ft/s)
Travel time =    9.63 min.     TC =   17.44  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.040(In/Hr)
Rainfall intensity =      1.984(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.882
Subarea runoff =      8.715(CFS) for    5.190(Ac.)
Total runoff =      9.692(CFS)   Total area =        5.54(Ac.)
Area averaged Fm value =    0.040(In/Hr)
Street flow at end of street =      9.692(CFS)
Half street flow at end of street =      4.846(CFS)
Depth of flow =   0.352(Ft.), Average velocity =   3.125(Ft/s)
Flow width (from curb towards crown)=  12.917(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        3.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      5.540(Ac.)
Runoff from this stream =      9.692(CFS)
Time of concentration =   17.44 min.
Rainfall intensity =     1.984(In/Hr)
Area averaged loss rate (Fm) =    0.0400(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        8.000 to Point/Station        9.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
```

```
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Initial subarea data:
Initial area flow distance =   318.000(Ft.)
Top (of initial area) elevation =   388.000(Ft.)
Bottom (of initial area) elevation =   385.000(Ft.)
Difference in elevation =     3.000(Ft.)
Slope =    0.00943  s(%)=       0.94
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   13.372 min.
Rainfall intensity =      2.310(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.744
Subarea runoff =      1.840(CFS)
Total initial stream area =        1.070(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.000 to Point/Station        3.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     13.079(CFS)
Depth of flow =   1.546(Ft.), Average velocity =   5.473(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00             10.00
       2             10.00              0.00
       3             20.00             10.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     13.079(CFS)
  '     '     flow top width =      3.092(Ft.)
  '     '    velocity=    5.473(Ft/s)
  '     '     area =      2.390(Sq.Ft)
  '     '     Froude number =     1.097

Upstream point elevation =   385.000(Ft.)
Downstream point elevation =   359.100(Ft.)
Flow length =   948.000(Ft.)
Travel time  =    2.89 min.
Time of concentration =   16.26 min.
Depth of flow =   1.546(Ft.)
Average velocity =   5.473(Ft/s)
Total irregular channel flow =    13.079(CFS)
Irregular channel normal depth above invert elev. =   1.546(Ft.)
Average velocity of channel(s) =   5.473(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Rainfall intensity =      2.066(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.726
Subarea runoff =     22.414(CFS) for   15.110(Ac.)
Total runoff =     24.253(CFS)   Total area =       16.18(Ac.)
Area averaged Fm value =    0.400(In/Hr)
Depth of flow =   1.949(Ft.), Average velocity =   6.387(Ft/s)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        3.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     16.180(Ac.)
Runoff from this stream =     24.253(CFS)
Time of concentration =   16.26 min.
Rainfall intensity =     2.066(In/Hr)
Area averaged loss rate (Fm) =    0.4000(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      5.54     9.692     17.44    0.040      1.984
2     16.18    24.253     16.26    0.400      2.066
Qmax(1) =
          1.000 *    1.000 *     9.692) +
          0.951 *    1.000 *    24.253) + =      32.757
Qmax(2) =
          1.042 *    0.932 *     9.692) +
          1.000 *    1.000 *    24.253) + =      33.667

Total of 2 main streams to confluence:
Flow rates before confluence point:
      10.692      25.253
Maximum flow rates at confluence using above data:
       32.757       33.667
Area of streams before confluence:
        5.540       16.180
Effective area values after confluence:
       21.720       21.344


Results of confluence:
Total flow rate =     33.667(CFS)
Time of concentration =    16.259 min.
Effective stream area after confluence  =     21.344(Ac.)
Study area average Pervious fraction(Ap) =  0.770
Study area average soil loss rate(Fm) =    0.308(In/Hr)
Study area total =      21.72(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        4.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   354.400(Ft.)
Downstream point/station elevation =   352.000(Ft.)
Pipe length  =   162.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    33.667(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    33.667(CFS)
Normal flow depth in pipe =   19.90(In.)
Flow top width inside pipe =   23.78(In.)
Critical Depth =   23.81(In.)
Pipe flow velocity =     10.72(Ft/s)
```

```
Travel time through pipe =    0.25 min.
Time of concentration (TC) =    16.51 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        5.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
----------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =     36.675(CFS)
Depth of flow =   0.585(Ft.), Average velocity =   4.641(Ft/s)
      ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00             22.00
      2             26.00              0.00
      3             39.00              0.00
      4             49.00             18.00
Manning's 'N' friction factor =   0.030
----------------------------------------------------------------
Sub-Channel flow  =     36.675(CFS)
  '     '     flow top width =     14.016(Ft.)
  '     '    velocity=    4.641(Ft/s)
  '     '     area =      7.902(Sq.Ft)
  '     '     Froude number =     1.089

Upstream point elevation =   352.000(Ft.)
Downstream point elevation =   346.500(Ft.)
Flow length =   277.000(Ft.)
Travel time  =    0.99 min.
Time of concentration =   17.51 min.
Depth of flow =   0.585(Ft.)
Average velocity =   4.641(Ft/s)
Total irregular channel flow =    36.675(CFS)
Irregular channel normal depth above invert elev. =   0.585(Ft.)
Average velocity of channel(s) =   4.641(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Rainfall intensity =      1.980(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.752
Subarea runoff =      5.940(CFS) for    5.270(Ac.)
Total runoff =     39.606(CFS)   Total area =       26.61(Ac.)
Area averaged Fm value =    0.326(In/Hr)
Depth of flow =   0.613(Ft.), Average velocity =   4.776(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        5.000 to Point/Station        5.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     26.614(Ac.)
Runoff from this stream =     39.606(CFS)
Time of concentration =   17.51 min.
```

```
Rainfall intensity =     1.980(In/Hr)
Area averaged loss rate (Fm) =    0.3264(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8159
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.000 to Point/Station       11.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Initial subarea data:
Initial area flow distance =   233.000(Ft.)
Top (of initial area) elevation =   370.000(Ft.)
Bottom (of initial area) elevation =   325.900(Ft.)
Difference in elevation =    44.100(Ft.)
Slope =    0.18927  s(%)=      18.93
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.482 min.
Rainfall intensity =      3.499(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.797
Subarea runoff =      3.932(CFS)
Total initial stream area =        1.410(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        5.000 to Point/Station        5.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.410(Ac.)
Runoff from this stream =      3.932(CFS)
Time of concentration =    6.48 min.
Rainfall intensity =     3.499(In/Hr)
Area averaged loss rate (Fm) =    0.4000(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     26.61    39.606     17.51    0.326      1.980
2      1.41     3.932      6.48    0.400      3.499
Qmax(1) =
          1.000 *    1.000 *    39.606) +
          0.510 *    1.000 *     3.932) + =      41.611
Qmax(2) =
          1.918 *    0.370 *    39.606) +
          1.000 *    1.000 *     3.932) + =      32.065

Total of 2 main streams to confluence:
Flow rates before confluence point:
      40.606       4.932
Maximum flow rates at confluence using above data:
```

```
       41.611       32.065
Area of streams before confluence:
       26.614        1.410
Effective area values after confluence:
       28.024       11.264


Results of confluence:
Total flow rate =     41.611(CFS)
Time of concentration =    17.505 min.
Effective stream area after confluence  =     28.024(Ac.)
Study area average Pervious fraction(Ap) =  0.825
Study area average soil loss rate(Fm) =    0.330(In/Hr)
Study area total =      28.02(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        5.000 to Point/Station        6.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =   344.500(Ft.)
Downstream point/station elevation =   342.500(Ft.)
Pipe length  =   381.80(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    41.611(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    41.611(CFS)
Normal flow depth in pipe =   25.78(In.)
Flow top width inside pipe =   32.47(In.)
Critical Depth =   25.23(In.)
Pipe flow velocity =      7.68(Ft/s)
Travel time through pipe =    0.83 min.
Time of concentration (TC) =    18.33 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        6.000 to Point/Station        6.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.080(In/Hr)
Time of concentration =    18.33 min.
Rainfall intensity =      1.928(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.772
Subarea runoff =     11.768(CFS) for    7.860(Ac.)
Total runoff =     53.380(CFS)   Total area =       35.88(Ac.)
Area averaged Fm value =    0.275(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        6.000 to Point/Station        7.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =   342.500(Ft.)
Downstream point/station elevation =   308.000(Ft.)
Pipe length  =   166.50(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    53.380(CFS)
```

```
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    53.380(CFS)
Normal flow depth in pipe =   13.44(In.)
Flow top width inside pipe =   20.16(In.)
Critical depth could not be calculated.
Pipe flow velocity =     32.82(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =    18.42 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        7.000 to Point/Station        7.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     35.884(Ac.)
Runoff from this stream =     53.380(CFS)
Time of concentration =   18.42 min.
Rainfall intensity =     1.923(In/Hr)
Area averaged loss rate (Fm) =    0.2753(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6882
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       13.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Initial subarea data:
Initial area flow distance =   301.000(Ft.)
Top (of initial area) elevation =   360.000(Ft.)
Bottom (of initial area) elevation =   340.000(Ft.)
Difference in elevation =    20.000(Ft.)
Slope =    0.06645  s(%)=       6.64
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.853 min.
Rainfall intensity =      2.926(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.777
Subarea runoff =      3.092(CFS)
Total initial stream area =        1.360(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       13.000 to Point/Station        7.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =      4.280(CFS)
Depth of flow =   0.639(Ft.), Average velocity =  11.003(Ft/s)
!!Warning: Water is above left or right bank elevations
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
```

```
       2              0.50              0.00
       3              1.00              0.50
Manning's 'N' friction factor =   0.020
-----------------------------------------------------------------
Sub-Channel flow  =      4.280(CFS)
  '     '     flow top width =      1.000(Ft.)
  '     '    velocity=   11.003(Ft/s)
  '     '     area =      0.389(Sq.Ft)
  '     '     Froude number =     3.109

Upstream point elevation =   340.000(Ft.)
Downstream point elevation =   308.000(Ft.)
Flow length =   261.000(Ft.)
Travel time  =    0.40 min.
Time of concentration =    9.25 min.
Depth of flow =   0.639(Ft.)
Average velocity =  11.003(Ft/s)
Total irregular channel flow =     4.280(CFS)
Irregular channel normal depth above invert elev. =   0.639(Ft.)
Average velocity of channel(s) =  11.003(Ft/s)
!!Warning: Water is above left or right bank elevations
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Rainfall intensity =      2.854(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.774
Subarea runoff =      2.297(CFS) for    1.080(Ac.)
Total runoff =      5.389(CFS)   Total area =        2.44(Ac.)
Area averaged Fm value =    0.400(In/Hr)
Depth of flow =   0.697(Ft.), Average velocity =  12.065(Ft/s)
!!Warning: Water is above left or right bank elevations


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        7.000 to Point/Station        7.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.440(Ac.)
Runoff from this stream =      5.389(CFS)
Time of concentration =    9.25 min.
Rainfall intensity =     2.854(In/Hr)
Area averaged loss rate (Fm) =    0.4000(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     35.88    53.380     18.42    0.275      1.923
2      2.44     5.389      9.25    0.400      2.854
Qmax(1) =
          1.000 *    1.000 *    53.380) +
          0.621 *    1.000 *     5.389) + =      56.724
```

```
Qmax(2) =
         1.565 *    0.502 *    53.380) +
         1.000 *    1.000 *     5.389) + =      47.332

Total of 2 main streams to confluence:
Flow rates before confluence point:
      54.380       6.389
Maximum flow rates at confluence using above data:
       56.724       47.332
Area of streams before confluence:
       35.884        2.440
Effective area values after confluence:
       38.324       20.458


Results of confluence:
Total flow rate =     56.724(CFS)
Time of concentration =    18.418 min.
Effective stream area after confluence  =     38.324(Ac.)
Study area average Pervious fraction(Ap) =  0.708
Study area average soil loss rate(Fm) =    0.283(In/Hr)
Study area total =      38.32(Ac.)
End of computations, total study area =           38.70 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.709
Area averaged SCS curve number (AMC 2) =  54.9
```

25 YEAR PROPOSED CONDITION

Orange County Rational Hydrology Program

(Hydrology Manual Date(s) October 1986 & November 1996)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2004 Version 8.0
Rational Hydrology Study, Date: 08/05/20 File Name: 1545D25A.roc

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SANTIAGO CREEK
PROPOSED CONDITION
25-YR STORM
DRAINAGE AREA A

Program License Serial Number 6062

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 25.0

Decimal fraction of study above 2000 ft., 600M = 0.0000
English Units Used for input data

++

Process from Point/Station 1.000 to Point/Station 2.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fp)= 0.400(In/Hr)
Max Catchment Loss (Fm) = 0.040(In/Hr)
Initial subarea data:
Initial area flow distance = 300.000(Ft.)
Top (of initial area) elevation = 389.000(Ft.)
Bottom (of initial area) elevation = 386.600(Ft.)
Difference in elevation = 2.400(Ft.)
Slope = 0.00800 s(%)= 0.80
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.818 min.
Rainfall intensity = 3.745(In/Hr) for a 25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.890
Subarea runoff = 1.167(CFS)
Total initial stream area = 0.350(Ac.)

++

Process from Point/Station 2.000 to Point/Station 3.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****

Top of street segment elevation = 386.600(Ft.)
End of street segment elevation = 359.100(Ft.)
Length of street segment = 1578.000(Ft.)
Height of curb above gutter flowline = 8.0(In.)
Width of half street (curb to crown) = 42.000(Ft.)

```
Distance from crown to crossfall grade break  =  40.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.017
Slope from grade break to crown (v/hz)  =   0.017
Street flow is on [2] side(s) of the street
Distance from curb to property line  =   8.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      6.563(CFS)
Depth of flow =   0.319(Ft.), Average velocity =   2.856(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.936(Ft.)
Flow velocity =   2.86(Ft/s)
Travel time =    9.21 min.     TC =   17.03  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.040(In/Hr)
Rainfall intensity =      2.411(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.885
Subarea runoff =     10.654(CFS) for    5.190(Ac.)
Total runoff =     11.821(CFS)   Total area =        5.54(Ac.)
Area averaged Fm value =    0.040(In/Hr)
Street flow at end of street =     11.821(CFS)
Half street flow at end of street =      5.910(CFS)
Depth of flow =   0.371(Ft.), Average velocity =   3.275(Ft/s)
Flow width (from curb towards crown)=  14.026(Ft.)


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Process from Point/Station        3.000 to Point/Station        3.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      5.540(Ac.)
Runoff from this stream =     11.821(CFS)
Time of concentration =   17.03 min.
Rainfall intensity =     2.411(In/Hr)
Area averaged loss rate (Fm) =    0.0400(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        8.000 to Point/Station        9.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
```

```
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Initial subarea data:
Initial area flow distance =   318.000(Ft.)
Top (of initial area) elevation =   388.000(Ft.)
Bottom (of initial area) elevation =   385.000(Ft.)
Difference in elevation =     3.000(Ft.)
Slope =    0.00943  s(%)=       0.94
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   13.372 min.
Rainfall intensity =      2.764(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.770
Subarea runoff =      2.277(CFS)
Total initial stream area =        1.070(Ac.)


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Process from Point/Station        9.000 to Point/Station        3.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =     16.380(CFS)
Depth of flow =   1.682(Ft.), Average velocity =   5.790(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00             10.00
       2             10.00              0.00
       3             20.00             10.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     16.380(CFS)
  '     '     flow top width =      3.364(Ft.)
  '     '    velocity=    5.790(Ft/s)
  '     '     area =      2.829(Sq.Ft)
  '     '     Froude number =     1.113

Upstream point elevation =   385.000(Ft.)
Downstream point elevation =   359.100(Ft.)
Flow length =   948.000(Ft.)
Travel time  =    2.73 min.
Time of concentration =   16.10 min.
Depth of flow =   1.682(Ft.)
Average velocity =   5.790(Ft/s)
Total irregular channel flow =    16.380(CFS)
Irregular channel normal depth above invert elev. =   1.682(Ft.)
Average velocity of channel(s) =   5.790(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Rainfall intensity =      2.488(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.755
Subarea runoff =     28.135(CFS) for   15.110(Ac.)
Total runoff =     30.412(CFS)   Total area =       16.18(Ac.)
Area averaged Fm value =    0.400(In/Hr)
Depth of flow =   2.121(Ft.), Average velocity =   6.758(Ft/s)
```

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Process from Point/Station        3.000 to Point/Station        3.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     16.180(Ac.)
Runoff from this stream =     30.412(CFS)
Time of concentration =   16.10 min.
Rainfall intensity =     2.488(In/Hr)
Area averaged loss rate (Fm) =    0.4000(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      5.54    11.821     17.03    0.040      2.411
2     16.18    30.412     16.10    0.400      2.488
Qmax(1) =
          1.000 *    1.000 *    11.821) +
          0.963 *    1.000 *    30.412) + =      41.102
Qmax(2) =
          1.033 *    0.946 *    11.821) +
          1.000 *    1.000 *    30.412) + =      41.955

Total of 2 main streams to confluence:
Flow rates before confluence point:
      12.821      31.412
Maximum flow rates at confluence using above data:
       41.102       41.955
Area of streams before confluence:
        5.540       16.180
Effective area values after confluence:
       21.720       21.418


Results of confluence:
Total flow rate =     41.955(CFS)
Time of concentration =    16.101 min.
Effective stream area after confluence  =     21.418(Ac.)
Study area average Pervious fraction(Ap) =  0.770
Study area average soil loss rate(Fm) =    0.308(In/Hr)
Study area total =      21.72(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        4.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   354.400(Ft.)
Downstream point/station elevation =   352.000(Ft.)
Pipe length  =   162.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    41.955(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    41.955(CFS)
Normal flow depth in pipe =   21.06(In.)
Flow top width inside pipe =   27.44(In.)
Critical Depth =   26.04(In.)
Pipe flow velocity =     11.40(Ft/s)
```

```
Travel time through pipe =    0.24 min.
Time of concentration (TC) =    16.34 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        5.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
----------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =     45.839(CFS)
Depth of flow =   0.669(Ft.), Average velocity =   5.043(Ft/s)
      ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00             22.00
       2            26.00              0.00
       3            39.00              0.00
       4            49.00             18.00
Manning's 'N' friction factor =   0.030
----------------------------------------------------------------
Sub-Channel flow  =     45.840(CFS)
  '     '     flow top width =     14.163(Ft.)
  '     '    velocity=    5.043(Ft/s)
  '     '     area =      9.090(Sq.Ft)
  '     '     Froude number =     1.109

Upstream point elevation =   352.000(Ft.)
Downstream point elevation =   346.500(Ft.)
Flow length =   277.000(Ft.)
Travel time  =    0.92 min.
Time of concentration =   17.25 min.
Depth of flow =   0.669(Ft.)
Average velocity =   5.043(Ft/s)
Total irregular channel flow =    45.839(CFS)
Irregular channel normal depth above invert elev. =   0.669(Ft.)
Average velocity of channel(s) =   5.043(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Rainfall intensity =      2.393(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.777
Subarea runoff =      7.685(CFS) for    5.270(Ac.)
Total runoff =     49.639(CFS)   Total area =       26.69(Ac.)
Area averaged Fm value =    0.326(In/Hr)
Depth of flow =   0.702(Ft.), Average velocity =   5.194(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        5.000 to Point/Station        5.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     26.688(Ac.)
Runoff from this stream =     49.639(CFS)
Time of concentration =   17.25 min.
```

```
Rainfall intensity =     2.393(In/Hr)
Area averaged loss rate (Fm) =    0.3263(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8158
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.000 to Point/Station       11.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Initial subarea data:
Initial area flow distance =   233.000(Ft.)
Top (of initial area) elevation =   370.000(Ft.)
Bottom (of initial area) elevation =   325.900(Ft.)
Difference in elevation =    44.100(Ft.)
Slope =    0.18927  s(%)=      18.93
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.482 min.
Rainfall intensity =      4.165(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.814
Subarea runoff =      4.777(CFS)
Total initial stream area =        1.410(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        5.000 to Point/Station        5.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.410(Ac.)
Runoff from this stream =      4.777(CFS)
Time of concentration =    6.48 min.
Rainfall intensity =     4.165(In/Hr)
Area averaged loss rate (Fm) =    0.4000(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     26.69    49.639     17.25    0.326      2.393
2      1.41     4.777      6.48    0.400      4.165
Qmax(1) =
          1.000 *    1.000 *    49.639) +
          0.529 *    1.000 *     4.777) + =      52.168
Qmax(2) =
          1.857 *    0.376 *    49.639) +
          1.000 *    1.000 *     4.777) + =      39.414

Total of 2 main streams to confluence:
Flow rates before confluence point:
      50.639       5.777
Maximum flow rates at confluence using above data:
```

```
       52.168       39.414
Area of streams before confluence:
       26.688        1.410
Effective area values after confluence:
       28.098       11.436


Results of confluence:
Total flow rate =     52.168(CFS)
Time of concentration =    17.253 min.
Effective stream area after confluence  =     28.098(Ac.)
Study area average Pervious fraction(Ap) =  0.825
Study area average soil loss rate(Fm) =    0.330(In/Hr)
Study area total =      28.10(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        5.000 to Point/Station        6.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =   344.500(Ft.)
Downstream point/station elevation =   342.500(Ft.)
Pipe length  =   381.80(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    52.168(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    52.168(CFS)
Normal flow depth in pipe =   28.21(In.)
Flow top width inside pipe =   34.89(In.)
Critical Depth =   27.67(In.)
Pipe flow velocity =      8.12(Ft/s)
Travel time through pipe =    0.78 min.
Time of concentration (TC) =    18.04 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        6.000 to Point/Station        6.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.080(In/Hr)
Time of concentration =    18.04 min.
Rainfall intensity =      2.334(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.794
Subarea runoff =     14.439(CFS) for    7.860(Ac.)
Total runoff =     66.607(CFS)   Total area =       35.96(Ac.)
Area averaged Fm value =    0.275(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        6.000 to Point/Station        7.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =   342.500(Ft.)
Downstream point/station elevation =   308.000(Ft.)
Pipe length  =   166.50(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    66.607(CFS)
```

```
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    66.607(CFS)
Normal flow depth in pipe =   15.92(In.)
Flow top width inside pipe =   17.98(In.)
Critical depth could not be calculated.
Pipe flow velocity =     34.04(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =    18.12 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        7.000 to Point/Station        7.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     35.958(Ac.)
Runoff from this stream =     66.607(CFS)
Time of concentration =   18.12 min.
Rainfall intensity =     2.328(In/Hr)
Area averaged loss rate (Fm) =    0.2754(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6884
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       13.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Initial subarea data:
Initial area flow distance =   301.000(Ft.)
Top (of initial area) elevation =   360.000(Ft.)
Bottom (of initial area) elevation =   340.000(Ft.)
Difference in elevation =    20.000(Ft.)
Slope =    0.06645  s(%)=       6.64
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.853 min.
Rainfall intensity =      3.491(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.797
Subarea runoff =      3.783(CFS)
Total initial stream area =        1.360(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       13.000 to Point/Station        7.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      5.242(CFS)
Depth of flow =   0.689(Ft.), Average velocity =  11.933(Ft/s)
!!Warning: Water is above left or right bank elevations
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
```

```
       2              0.50              0.00
       3              1.00              0.50
Manning's 'N' friction factor =   0.020
-----------------------------------------------------------------
Sub-Channel flow  =      5.242(CFS)
  '     '     flow top width =      1.000(Ft.)
  '     '    velocity=   11.933(Ft/s)
  '     '     area =      0.439(Sq.Ft)
  '     '     Froude number =     3.173

Upstream point elevation =   340.000(Ft.)
Downstream point elevation =   308.000(Ft.)
Flow length =   261.000(Ft.)
Travel time  =    0.36 min.
Time of concentration =    9.22 min.
Depth of flow =   0.689(Ft.)
Average velocity =  11.933(Ft/s)
Total irregular channel flow =     5.242(CFS)
Irregular channel normal depth above invert elev. =   0.689(Ft.)
Average velocity of channel(s) =  11.933(Ft/s)
!!Warning: Water is above left or right bank elevations
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Rainfall intensity =      3.412(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.794
Subarea runoff =      2.831(CFS) for    1.080(Ac.)
Total runoff =      6.615(CFS)   Total area =        2.44(Ac.)
Area averaged Fm value =    0.400(In/Hr)
Depth of flow =   0.755(Ft.), Average velocity =  13.096(Ft/s)
!!Warning: Water is above left or right bank elevations


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        7.000 to Point/Station        7.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.440(Ac.)
Runoff from this stream =      6.615(CFS)
Time of concentration =    9.22 min.
Rainfall intensity =     3.412(In/Hr)
Area averaged loss rate (Fm) =    0.4000(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     35.96    66.607     18.12    0.275      2.328
2      2.44     6.615      9.22    0.400      3.412
Qmax(1) =
          1.000 *    1.000 *    66.607) +
          0.640 *    1.000 *     6.615) + =      70.840
```

```
Qmax(2) =
         1.528 *    0.509 *    66.607) +
         1.000 *    1.000 *     6.615) + =      58.408

Total of 2 main streams to confluence:
Flow rates before confluence point:
      67.607       7.615
Maximum flow rates at confluence using above data:
       70.840       58.408
Area of streams before confluence:
       35.958        2.440
Effective area values after confluence:
       38.398       20.733


Results of confluence:
Total flow rate =     70.840(CFS)
Time of concentration =    18.119 min.
Effective stream area after confluence  =     38.398(Ac.)
Study area average Pervious fraction(Ap) =  0.708
Study area average soil loss rate(Fm) =    0.283(In/Hr)
Study area total =      38.40(Ac.)
End of computations, total study area =           38.70 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.709
Area averaged SCS curve number (AMC 2) =  54.9
```

100 YEAR PROPOSED CONDITION

Orange County Rational Hydrology Program

(Hydrology Manual Date(s) October 1986 & November 1996)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2004 Version 8.0
Rational Hydrology Study, Date: 08/05/20 File Name: 1545D100A.roc

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SANTIAGO CREEK
PROPOSED CONDITION
100-YR STORM
DRAINAGE AREA A

Program License Serial Number 6062

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0

Decimal fraction of study above 2000 ft., 600M = 0.0000
English Units Used for input data

++

Process from Point/Station 1.000 to Point/Station 2.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fp)= 0.400(In/Hr)
Max Catchment Loss (Fm) = 0.040(In/Hr)
Initial subarea data:
Initial area flow distance = 300.000(Ft.)
Top (of initial area) elevation = 389.000(Ft.)
Bottom (of initial area) elevation = 386.600(Ft.)
Difference in elevation = 2.400(Ft.)
Slope = 0.00800 s(%)= 0.80
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.818 min.
Rainfall intensity = 4.789(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.892
Subarea runoff = 1.496(CFS)
Total initial stream area = 0.350(Ac.)

++

Process from Point/Station 2.000 to Point/Station 3.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****

Top of street segment elevation = 386.600(Ft.)
End of street segment elevation = 359.100(Ft.)
Length of street segment = 1578.000(Ft.)
Height of curb above gutter flowline = 8.0(In.)
Width of half street (curb to crown) = 42.000(Ft.)

```
Distance from crown to crossfall grade break  =  40.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.017
Slope from grade break to crown (v/hz)  =   0.017
Street flow is on [2] side(s) of the street
Distance from curb to property line  =   8.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      8.519(CFS)
Depth of flow =   0.341(Ft.), Average velocity =   3.032(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.234(Ft.)
Flow velocity =   3.03(Ft/s)
Travel time =    8.67 min.     TC =   16.49  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.040(In/Hr)
Rainfall intensity =      3.123(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.888
Subarea runoff =     13.874(CFS) for    5.190(Ac.)
Total runoff =     15.370(CFS)   Total area =        5.54(Ac.)
Area averaged Fm value =    0.040(In/Hr)
Street flow at end of street =     15.370(CFS)
Half street flow at end of street =      7.685(CFS)
Depth of flow =   0.398(Ft.), Average velocity =   3.486(Ft/s)
Flow width (from curb towards crown)=  15.613(Ft.)


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Process from Point/Station        3.000 to Point/Station        3.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      5.540(Ac.)
Runoff from this stream =     15.370(CFS)
Time of concentration =   16.49 min.
Rainfall intensity =     3.123(In/Hr)
Area averaged loss rate (Fm) =    0.0400(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        8.000 to Point/Station        9.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
```

```
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Initial subarea data:
Initial area flow distance =   318.000(Ft.)
Top (of initial area) elevation =   388.000(Ft.)
Bottom (of initial area) elevation =   385.000(Ft.)
Difference in elevation =     3.000(Ft.)
Slope =    0.00943  s(%)=       0.94
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   13.372 min.
Rainfall intensity =      3.521(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.798
Subarea runoff =      3.006(CFS)
Total initial stream area =        1.070(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.000 to Point/Station        3.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     21.840(CFS)
Depth of flow =   1.874(Ft.), Average velocity =   6.222(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00             10.00
       2             10.00              0.00
       3             20.00             10.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     21.840(CFS)
  '     '     flow top width =      3.747(Ft.)
  '     '    velocity=    6.222(Ft/s)
  '     '     area =      3.510(Sq.Ft)
  '     '     Froude number =     1.133

Upstream point elevation =   385.000(Ft.)
Downstream point elevation =   359.100(Ft.)
Flow length =   948.000(Ft.)
Travel time  =    2.54 min.
Time of concentration =   15.91 min.
Depth of flow =   1.874(Ft.)
Average velocity =   6.222(Ft/s)
Total irregular channel flow =    21.840(CFS)
Irregular channel normal depth above invert elev. =   1.874(Ft.)
Average velocity of channel(s) =   6.222(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Rainfall intensity =      3.187(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.787
Subarea runoff =     37.584(CFS) for   15.110(Ac.)
Total runoff =     40.589(CFS)   Total area =       16.18(Ac.)
Area averaged Fm value =    0.400(In/Hr)
Depth of flow =   2.364(Ft.), Average velocity =   7.264(Ft/s)
```

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Process from Point/Station        3.000 to Point/Station        3.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     16.180(Ac.)
Runoff from this stream =     40.589(CFS)
Time of concentration =   15.91 min.
Rainfall intensity =     3.187(In/Hr)
Area averaged loss rate (Fm) =    0.4000(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      5.54    15.370     16.49    0.040      3.123
2     16.18    40.589     15.91    0.400      3.187
Qmax(1) =
          1.000 *    1.000 *    15.370) +
          0.977 *    1.000 *    40.589) + =      55.017
Qmax(2) =
          1.021 *    0.965 *    15.370) +
          1.000 *    1.000 *    40.589) + =      55.730

Total of 2 main streams to confluence:
Flow rates before confluence point:
      16.370      41.589
Maximum flow rates at confluence using above data:
       55.017       55.730
Area of streams before confluence:
        5.540       16.180
Effective area values after confluence:
       21.720       21.525


Results of confluence:
Total flow rate =     55.730(CFS)
Time of concentration =    15.911 min.
Effective stream area after confluence  =     21.525(Ac.)
Study area average Pervious fraction(Ap) =  0.770
Study area average soil loss rate(Fm) =    0.308(In/Hr)
Study area total =      21.72(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        4.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   354.400(Ft.)
Downstream point/station elevation =   352.000(Ft.)
Pipe length  =   162.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    55.730(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    55.730(CFS)
Normal flow depth in pipe =   23.71(In.)
Flow top width inside pipe =   29.68(In.)
Critical Depth =   29.11(In.)
Pipe flow velocity =     12.20(Ft/s)
```

```
Travel time through pipe =    0.22 min.
Time of concentration (TC) =    16.13 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        5.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     61.013(CFS)
Depth of flow =   0.795(Ft.), Average velocity =   5.603(Ft/s)
      ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00             22.00
       2            26.00              0.00
       3            39.00              0.00
       4            49.00             18.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     61.013(CFS)
  '     '     flow top width =     14.382(Ft.)
  '     '    velocity=    5.603(Ft/s)
  '     '     area =     10.890(Sq.Ft)
  '     '     Froude number =     1.135

Upstream point elevation =   352.000(Ft.)
Downstream point elevation =   346.500(Ft.)
Flow length =   277.000(Ft.)
Travel time  =    0.82 min.
Time of concentration =   16.96 min.
Depth of flow =   0.795(Ft.)
Average velocity =   5.603(Ft/s)
Total irregular channel flow =    61.013(CFS)
Irregular channel normal depth above invert elev. =   0.795(Ft.)
Average velocity of channel(s) =   5.603(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Rainfall intensity =      3.073(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.804
Subarea runoff =     10.516(CFS) for    5.270(Ac.)
Total runoff =     66.246(CFS)   Total area =       26.80(Ac.)
Area averaged Fm value =    0.326(In/Hr)
Depth of flow =   0.836(Ft.), Average velocity =   5.774(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        5.000 to Point/Station        5.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     26.795(Ac.)
Runoff from this stream =     66.246(CFS)
Time of concentration =   16.96 min.
```

```
Rainfall intensity =     3.073(In/Hr)
Area averaged loss rate (Fm) =    0.3262(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8156
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.000 to Point/Station       11.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Initial subarea data:
Initial area flow distance =   233.000(Ft.)
Top (of initial area) elevation =   370.000(Ft.)
Bottom (of initial area) elevation =   325.900(Ft.)
Difference in elevation =    44.100(Ft.)
Slope =    0.18927  s(%)=      18.93
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.482 min.
Rainfall intensity =      5.332(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.832
Subarea runoff =      6.259(CFS)
Total initial stream area =        1.410(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        5.000 to Point/Station        5.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.410(Ac.)
Runoff from this stream =      6.259(CFS)
Time of concentration =    6.48 min.
Rainfall intensity =     5.332(In/Hr)
Area averaged loss rate (Fm) =    0.4000(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     26.80    66.246     16.96    0.326      3.073
2      1.41     6.259      6.48    0.400      5.332
Qmax(1) =
          1.000 *    1.000 *    66.246) +
          0.542 *    1.000 *     6.259) + =      69.638
Qmax(2) =
          1.822 *    0.382 *    66.246) +
          1.000 *    1.000 *     6.259) + =      52.405

Total of 2 main streams to confluence:
Flow rates before confluence point:
      67.246       7.259
Maximum flow rates at confluence using above data:
```

```
       69.638       52.405
Area of streams before confluence:
       26.795        1.410
Effective area values after confluence:
       28.205       11.652


Results of confluence:
Total flow rate =     69.638(CFS)
Time of concentration =    16.957 min.
Effective stream area after confluence  =     28.205(Ac.)
Study area average Pervious fraction(Ap) =  0.825
Study area average soil loss rate(Fm) =    0.330(In/Hr)
Study area total =      28.21(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        5.000 to Point/Station        6.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =   344.500(Ft.)
Downstream point/station elevation =   342.500(Ft.)
Pipe length  =   381.80(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    69.638(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    69.638(CFS)
Normal flow depth in pipe =   32.88(In.)
Flow top width inside pipe =   34.63(In.)
Critical Depth =   31.40(In.)
Pipe flow velocity =      8.62(Ft/s)
Travel time through pipe =    0.74 min.
Time of concentration (TC) =    17.70 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        6.000 to Point/Station        6.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.080(In/Hr)
Time of concentration =    17.70 min.
Rainfall intensity =      2.999(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.817
Subarea runoff =     18.767(CFS) for    7.860(Ac.)
Total runoff =     88.405(CFS)   Total area =       36.07(Ac.)
Area averaged Fm value =    0.275(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        6.000 to Point/Station        7.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =   342.500(Ft.)
Downstream point/station elevation =   308.000(Ft.)
Pipe length  =   166.50(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    88.405(CFS)
```

```
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    88.405(CFS)
Normal flow depth in pipe =   17.13(In.)
Flow top width inside pipe =   21.70(In.)
Critical depth could not be calculated.
Pipe flow velocity =     36.85(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =    17.77 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        7.000 to Point/Station        7.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     36.065(Ac.)
Runoff from this stream =     88.405(CFS)
Time of concentration =   17.77 min.
Rainfall intensity =     2.992(In/Hr)
Area averaged loss rate (Fm) =    0.2755(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6886
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       13.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Initial subarea data:
Initial area flow distance =   301.000(Ft.)
Top (of initial area) elevation =   360.000(Ft.)
Bottom (of initial area) elevation =   340.000(Ft.)
Difference in elevation =    20.000(Ft.)
Slope =    0.06645  s(%)=       6.64
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.853 min.
Rainfall intensity =      4.460(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.819
Subarea runoff =      4.969(CFS)
Total initial stream area =        1.360(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       13.000 to Point/Station        7.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =      6.867(CFS)
Depth of flow =   0.767(Ft.), Average velocity =  13.294(Ft/s)
!!Warning: Water is above left or right bank elevations
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
```

```
       2              0.50              0.00
       3              1.00              0.50
Manning's 'N' friction factor =   0.020
-----------------------------------------------------------------
Sub-Channel flow  =      6.867(CFS)
  '     '     flow top width =      1.000(Ft.)
  '     '    velocity=   13.294(Ft/s)
  '     '     area =      0.517(Sq.Ft)
  '     '     Froude number =     3.260

Upstream point elevation =   340.000(Ft.)
Downstream point elevation =   308.000(Ft.)
Flow length =   261.000(Ft.)
Travel time  =    0.33 min.
Time of concentration =    9.18 min.
Depth of flow =   0.767(Ft.)
Average velocity =  13.294(Ft/s)
Total irregular channel flow =     6.867(CFS)
Irregular channel normal depth above invert elev. =   0.767(Ft.)
Average velocity of channel(s) =  13.294(Ft/s)
!!Warning: Water is above left or right bank elevations
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.400(In/Hr)
Max Catchment Loss (Fm) =     0.400(In/Hr)
Rainfall intensity =      4.368(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.818
Subarea runoff =      3.745(CFS) for    1.080(Ac.)
Total runoff =      8.714(CFS)   Total area =        2.44(Ac.)
Area averaged Fm value =    0.400(In/Hr)
Depth of flow =   0.846(Ft.), Average velocity =  14.623(Ft/s)
!!Warning: Water is above left or right bank elevations


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        7.000 to Point/Station        7.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.440(Ac.)
Runoff from this stream =      8.714(CFS)
Time of concentration =    9.18 min.
Rainfall intensity =     4.368(In/Hr)
Area averaged loss rate (Fm) =    0.4000(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     36.07    88.405     17.77    0.275      2.992
2      2.44     8.714      9.18    0.400      4.368
Qmax(1) =
          1.000 *    1.000 *    88.405) +
          0.653 *    1.000 *     8.714) + =      94.097
```

```
Qmax(2) =
          1.507 *    0.517 *    88.405) +
          1.000 *    1.000 *     8.714) + =      77.524

Total of 2 main streams to confluence:
Flow rates before confluence point:
      89.405       9.714
Maximum flow rates at confluence using above data:
       94.097       77.524
Area of streams before confluence:
       36.065        2.440
Effective area values after confluence:
       38.505       21.071


Results of confluence:
Total flow rate =     94.097(CFS)
Time of concentration =    17.770 min.
Effective stream area after confluence  =     38.505(Ac.)
Study area average Pervious fraction(Ap) =  0.708
Study area average soil loss rate(Fm) =    0.283(In/Hr)
Study area total =      38.51(Ac.)
End of computations, total study area =           38.70 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.709
Area averaged SCS curve number (AMC 2) =  54.9
```

EXISTING CATCH BASIN

EXISTING CATCH BASIN

(8) ELEV. 388

(9) ELEV. 385

L=318'

A3 1.07

L=948'

(1) ELEV. 389.0

L=300'

(2) ELEV. 386.6

A1 0.35

A5 5.27

A7 1.36

(12) ELEV. 360.0

L=301'

ELEV. 340.0 (13)

L=261'

(7) ELEV. 309.0
Q_{100}=94.1 cfs
Q_{25}=70.8 cfs
Q_{10}=56.7 cfs

A9 1.08

L=277'

(4) 352.0 INV.

(5) ELEV. 346.5
344.5 INV.
Q_{100}=62.6 cfs
Q_{25}=52.2 cfs
Q_{10}=41.6 cfs

(3) ELEV. 359.1
354.4 INV.
Q_{100}=55.7 cfs
Q_{25}=42.0 cfs
Q_{10}=33.7 cfs

A4 15.11

(10) 370.0 INV.

(6) ELEV. 372.5
342.5 INV.
Q_{100}=88.4 cfs
Q_{25}=66.6 cfs
Q_{10}=53.4 cfs

L=233'

PROP. PUMP

A8 1.41

A6 7.86

(11) PROP. OUTLET
329.9 INV.
Q_{100}=6.3 cfs
Q_{25}=4.8 cfs
Q_{10}=3.9 cfs

A2 5.19

L=1578'

LEGEND

- MAJOR WATERSHED BOUNDARY
- MINOR WATERSHED BOUNDARY
- FLOW PATH
- SOIL BOUNDARY
- C17 / 70.21 — DRAINAGE AREA DESIGNATION / ACRES
- (340) — NODE DESIGNATION
- L=300' — LENGTH OF EXISTING FLOW PATH

N

100' 0 100' 200' 300'
SCALE IN FEET

FIGURE 2

PROPOSED CONDITION HYDROLOGY KEY MAP

FOR

SANTIAGO CREEK PIT

CITY OF ORANGE

HYD: CRA DRAFT: CRA CHECK: MCT	KWC ENGINEERS CIVIL ENGINEERING, PLANNING AND CONSTRUCTION MANAGEMENT 1880 COMPTON AVENUE, SUITE 100 ● CORONA, CA. 92881-3375 ● 909-734-2130	SHEET 1 OF 1

G:\1545\DWG\REPORTS\HYDRO\1545 HYDRO KEY MAP.dwg (6/25/2020 8:59 AM) Plotted by: Chris Au

Appendix

D

FEMA FLOOD INSURANCE RATE MAPS

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 11. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from the National Agriculture Imagery Program, dated 2005.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- (A)—(A) — Cross section line
- (23)—(23) — Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 3 76 000mN — 1000-meter Universal Transverse Mercator grid values, zone NAD 1983 UTM Zone 11N
- 600000 FT — 5000-foot grid ticks: California State Plane coordinate system, zone VI (FIPSZONE 0406), Lambert Conformal Conic projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- ●M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 15, 1989

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
February 5, 1992 - November 3, 1993 - January 3, 1997 - February 18, 2004 - December 3, 2009 : for description of revisions, see Notice to Users page in the Flood Insurance Study report.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0158J

FIRM

FLOOD INSURANCE RATE MAP

ORANGE COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 158 OF 539

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANAHEIM, CITY OF	060213	0158	J
ORANGE COUNTY	060212	0158	J
ORANGE, CITY OF	060228	0158	J
VILLA PARK, CITY OF	060236	0158	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 06059C0158J

MAP REVISED DECEMBER 3, 2009

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 11. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from the National Agriculture Imagery Program, dated 2005.

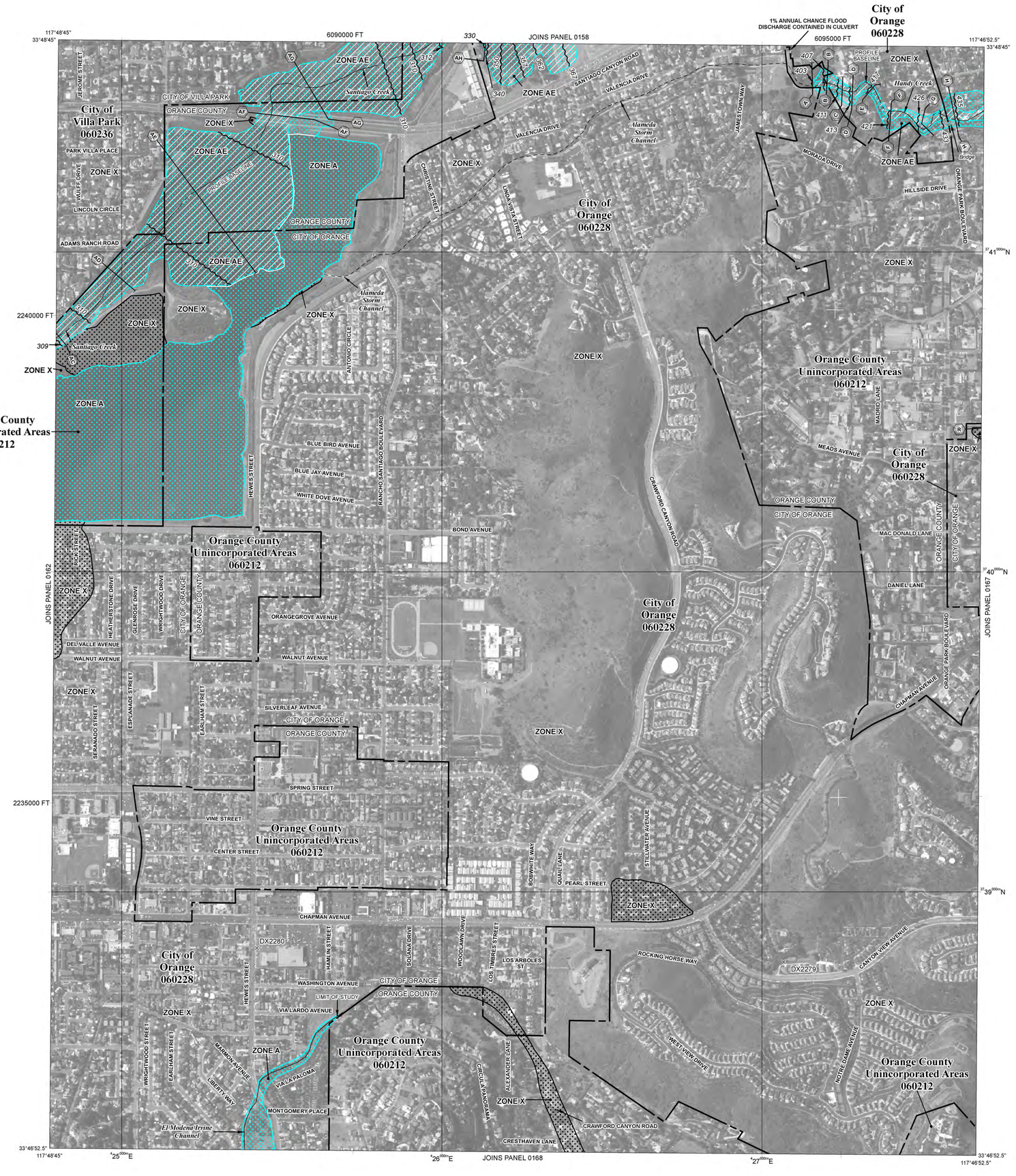
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referred to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 3776000mN — 1000-meter Universal Transverse Mercator grid values, zone NAD 1983 UTM Zone 11N
- 600000 FT — 5000-foot grid ticks: California State Plane coordinate system, zone VI (FIPSZONE 0406), Lambert Conformal Conic projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- ●M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 15, 1989

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
February 5, 1992 - November 3, 1993 - January 3, 1997 - February 18, 2004 - December 3, 2009 : for description of revisions, see Notice to Users page in the Flood Insurance Study report.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0166J

FIRM

FLOOD INSURANCE RATE MAP

ORANGE COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 166 OF 539

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ORANGE COUNTY	060212	0166	J
ORANGE, CITY OF	060228	0166	J
VILLA PARK, CITY OF	060236	0166	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 06059C0166J

MAP REVISED DECEMBER 3, 2009

Federal Emergency Management Agency

Appendix

E

DESILTING BASIN CALCULATIONS

Sediment / Desilting Basin Design

A Sediment basin is a controlled stormwater release structure formed by excavation or by construction of an embankment of compacted soil across a drainage way, or other suitable location. It is intended to trap sediment before it leaves the site. Based on State of California Water Resource Control Board, Sediment Basin Sizing Guideline, following sediment design steps are used to calculate the minimum / maximum parameters needed for proposed sediment basins.

Step A: Sediment Basin Volume Sizing

The sediment basin shall contain at least 2,700 cubic feet of runoff per acre of watershed.

Storage Req. Volume (CF) = Watershed Area x 2,700 CF / AC.

Actual storage volume shall be equal or greater than storage req. volume.

Step B: Determine Number of Orifices Required

The basin outlet should be design to drain the basin within 24 to 72 hours (also referred to as "drawdown time"). The 24-hour limit is specified to provide adequate settling time and the 72-hour limit is specified to mitigate vector control concerns.

Total Orifice Req. (Min.) < Total Orifice Provided < Total Orifice Req. (Max.)

Step C: Sediment Basin Peak Runoff Design

Sediment basin shall design to handle runoff not less than the 20-year / 1-hour storm event per CCR 3706. However, typical minimum flood protection criteria by Riverside County Flood Control & Conservation Water District (RCFC&WCD) is for a 100-year /1-hour storm event. Therefore, outlet shall be design to RCFC&WCD criteria which is more stringent.

Q for Orifice Control (cfs) > 100-YR Storm Runoff Q_{100}

See attached Sediment / Desilting Basin Calculations.

SANTIAGO CREEK PIT
DESILTING BASIN DESIGN

Desilting Basin No.	Contributory Area (Ac)	Storage Req. Volume (CF)	Storage Req. Volume (CY)	Prop. Basin Top Area (A_1 in Ft)	Prop. Basin Bot. Area (A_2 in Ft)	Storage Depth (ft)	Actual Storage Volume (CF)	Actual Storage Volume (CY)
1	9.07	24,489	907	18,466	12,648	3	46,671	1,729

Desilting Basin No.	Orifice Coef. "C"	Drawdown Time "T" (hrs)	Gravity ("g")	Surface Area of Basin @ Mid. Elev. ("A" in ft^2)	Max. Height from Lowest Orifice to Max. water surface (h_{max} in ft)	Max. Height from Lowest Orifice to Centroid of Orifices Config. ($h_{centroid}$ in ft)	Total Area of Orifices Required (ft^2)	Total (1.5" Dia.) Orifices Req. (max)
1	0.60	24	32.2	15,557	2.5	0.5	0.13	11

Desilting Basin No.	Orifice Coef. "C"	Drawdown Time "T" (hrs)	Gravity ("g")	Surface Area of Basin @ Mid. Elev. ("A" in ft^2)	Max. Height from Lowest Orifice to Max. water surface (h_{max} in ft)	Max. Height from Lowest Orifice to Centroid of Orifices Config. ($h_{centroid}$ in ft)	Total Area of Orifices (ft^2)	Total (1.5" Dia.) Orifices Req. (min)
1	0.80	72	32.2	15,557	2	0.5	0.03	2

Reference: California Stormwater BMP Handbook Jan. 2003 - Sediment Basin SE-3

Desilting Basin No.	Runoff Coef. "C"	100-YR Storm Rainfall Intensity "I" (in/hr)	Contributory Area (Ac)	100-YR Storm Runoff Q_{100} (cfs)	Diameter of Riser Inlet (ft)	Circumference of Riser Inlet (ft)	Min. Head above Top of Grate Required (ft) (Weir Control)
1	0.8	2.63	9.07	19.08	5	15.7	0.26

Desilting Basin No.	Weir Coef. "C"	100-YR Storm Runoff Q_{100} (cfs)	Head above Spillway (ft)	Min. Length of Spillway Required (ft) (Weir Control)
1	3.367	19.08	0.5	16.03

Appendix

F

STORM DRAIN HYDRAULICS WSPG ANALYSIS

```
T1 JN 15.1545.2 SANTIAGO CREEK PIT                                                  0
T2 CITY OF ORANGE
T3 STORM DRAIN LINE-A - MODELED BY CRA
SO    954.0400321.400  1                          322.19
R     955.6300322.570  1      .050                              0.000    .000 0
R     982.7800340.000  1      .050                              0.000    .000 0
R     997.5000340.500  1      .050                              0.000    .000 0
R    1000.0000341.930  2      .013                              0.000    .000 0
R    1046.3300342.180  2      .013                              0.000    .000 0
R    1091.0900342.420  2      .013                            -56.990    .000 0
JX   1095.7600342.450  4  3   .013   18.770          344.450         45.0         .000
R    1409.6800344.150  4      .013                              0.000    .000 0
R    1424.9800344.230  4      .013                              9.930    .000 0
R    1474.9800344.500  4      .013                              0.000    .000 0
WE   1474.9800344.500  5      .200
SH   1474.9800344.500  5                          347.500
CD   1  1   0    .000   1.500    4.000 2.000 2.000 -0.0
CD   2  4   1    .000   4.000     .000  .000  .000   .00
CD   3  4   1    .000   2.000     .000  .000  .000   .00
CD   4  4   1    .000   4.000     .000  .000  .000   .00
CD   5  3   0    .000   4.000    4.000  .000  .000   .00
Q             69.640   .0
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Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 8-25-2020 Time:11:55:20

JN 15.1545.2 SANTIAGO CREEK PIT
CITY OF ORANGE
STORM DRAIN LINE-A - MODELED BY CRA

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
954.040	321.400	.865	322.265	88.41	17.84	4.94	327.21	.00	1.83	7.46	1.500	4.000	2.00	0 .0
1.590	.7358					.6548	1.04	.86	3.86	.84	.050	.00	2.00	TRAP
955.630	322.570	.874	323.444	88.41	17.60	4.81	328.25	.00	1.83	7.50	1.500	4.000	2.00	0 .0
3.473	.6420					.6420	2.23	.87	3.79	.87	.050	.00	2.00	TRAP
959.103	324.800	.874	325.674	88.41	17.60	4.81	330.48	.00	1.83	7.50	1.500	4.000	2.00	0 .0
9.940	.6420					.6214	6.18	.87	3.79	.87	.050	.00	2.00	TRAP
969.043	331.181	.890	332.071	88.41	17.19	4.59	336.66	.00	1.83	7.56	1.500	4.000	2.00	0 .0
4.862	.6420					.5630	2.74	.89	3.67	.87	.050	.00	2.00	TRAP
973.905	334.302	.923	335.225	88.41	16.39	4.17	339.40	.00	1.83	7.69	1.500	4.000	2.00	0 .0
2.305	.6420					.4922	1.13	.92	3.45	.87	.050	.00	2.00	TRAP
976.210	335.782	.957	336.739	88.41	15.63	3.79	340.53	.00	1.83	7.83	1.500	4.000	2.00	0 .0
1.464	.6420					.4305	.63	.96	3.24	.87	.050	.00	2.00	TRAP
977.674	336.722	.992	337.714	88.41	14.90	3.45	341.16	.00	1.83	7.97	1.500	4.000	2.00	0 .0
1.045	.6420					.3766	.39	.99	3.04	.87	.050	.00	2.00	TRAP
978.719	337.393	1.028	338.421	88.41	14.21	3.13	341.55	.00	1.83	8.11	1.500	4.000	2.00	0 .0
.793	.6420					.3295	.26	1.03	2.86	.87	.050	.00	2.00	TRAP
979.512	337.902	1.065	338.967	88.41	13.54	2.85	341.82	.00	1.83	8.26	1.500	4.000	2.00	0 .0
.624	.6420					.2884	.18	1.06	2.69	.87	.050	.00	2.00	TRAP

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 8-25-2020 Time:11:55:20

JN 15.1545.2 SANTIAGO CREEK PIT

CITY OF ORANGE

STORM DRAIN LINE-A - MODELED BY CRA

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
980.136	338.303	1.103	339.406	88.41	12.91	2.59	342.00	.00	1.83	8.41	1.500	4.000	2.00	0 .0
.503	.6420					.2525	.13	1.10	2.52	.87	.050	.00	2.00	TRAP
980.640	338.626	1.142	339.768	88.41	12.31	2.35	342.12	.00	1.83	8.57	1.500	4.000	2.00	0 .0
.412	.6420					.2211	.09	1.14	2.37	.87	.050	.00	2.00	TRAP
981.052	338.891	1.183	340.074	88.41	11.74	2.14	342.21	.00	1.83	8.73	1.500	4.000	2.00	0 .0
.341	.6420					.1937	.07	1.18	2.23	.87	.050	.00	2.00	TRAP
981.393	339.110	1.225	340.334	88.41	11.19	1.95	342.28	.00	1.83	8.90	1.500	4.000	2.00	0 .0
.284	.6420					.1697	.05	1.22	2.09	.87	.050	.00	2.00	TRAP
981.677	339.292	1.268	340.559	88.41	10.67	1.77	342.33	.00	1.83	9.07	1.500	4.000	2.00	0 .0
.237	.6420					.1487	.04	1.27	1.97	.87	.050	.00	2.00	TRAP
981.913	339.443	1.312	340.755	88.41	10.18	1.61	342.36	.00	1.83	9.25	1.500	4.000	2.00	0 .0
.197	.6420					.1303	.03	1.31	1.85	.87	.050	.00	2.00	TRAP
982.110	339.570	1.357	340.927	88.41	9.70	1.46	342.39	.00	1.83	9.43	1.500	4.000	2.00	0 .0
.163	.6420					.1143	.02	1.36	1.74	.87	.050	.00	2.00	TRAP
982.273	339.675	1.404	341.079	88.41	9.25	1.33	342.41	.00	1.83	9.62	1.500	4.000	2.00	0 .0
.134	.6420					.1002	.01	1.40	1.64	.87	.050	.00	2.00	TRAP
982.408	339.761	1.452	341.213	88.41	8.82	1.21	342.42	.00	1.83	9.81	1.500	4.000	2.00	0 .0
.109	.6420					.0879	.01	1.45	1.54	.87	.050	.00	2.00	TRAP

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 8-25-2020 Time:11:55:20

JN 15.1545.2 SANTIAGO CREEK PIT
CITY OF ORANGE
STORM DRAIN LINE-A - MODELED BY CRA

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
982.517	339.831	1.501	341.332	88.41	8.41	1.10	342.43	.00	1.83	10.00	1.500	4.000	2.00	0 .0
.087	.6420					.0771	.01	1.50	1.45	.87	.050	.00	2.00	TRAP
982.604	339.887	1.552	341.439	88.41	8.02	1.00	342.44	.00	1.83	10.21	1.500	4.000	2.00	0 .0
.067	.6420					.0676	.00	1.55	1.36	.87	.050	.00	2.00	TRAP
982.671	339.930	1.604	341.534	88.41	7.65	.91	342.44	.00	1.83	10.42	1.500	4.000	2.00	0 .0
.050	.6420					.0594	.00	1.60	1.28	.87	.050	.00	2.00	TRAP
982.721	339.962	1.658	341.620	88.41	7.29	.83	342.44	.00	1.83	10.63	1.500	4.000	2.00	0 .0
.034	.6420					.0521	.00	1.66	1.20	.87	.050	.00	2.00	TRAP
982.754	339.983	1.713	341.696	88.41	6.95	.75	342.45	.00	1.83	10.85	1.500	4.000	2.00	0 .0
.019	.6420					.0457	.00	1.71	1.13	.87	.050	.00	2.00	TRAP
982.774	339.996	1.770	341.765	88.41	6.63	.68	342.45	.00	1.83	11.08	1.500	4.000	2.00	0 .0
.006	.6420					.0401	.00	1.77	1.06	.87	.050	.00	2.00	TRAP
982.780	340.000	1.829	341.829	88.41	6.31	.62	342.45	.00	1.83	11.31	1.500	4.000	2.00	0 .0
1.200	.0340					.0356	.04	1.83	1.00	1.87	.050	.00	2.00	TRAP
983.980	340.041	1.874	341.914	88.41	6.09	.58	342.49	.00	1.83	11.49	1.500	4.000	2.00	0 .0
13.520	.0340					.0338	.46	1.87	.96	1.87	.050	.00	2.00	TRAP
997.500	340.500	1.874	342.374	88.41	6.09	.58	342.95	.00	1.83	11.49	1.500	4.000	2.00	0 .0
997.500	340.500	1.858	342.358	88.41	15.46	3.71	346.07	.00	2.85	3.99	4.000	.000	.00	1 .0
.220	.5720					.0190	.00	1.86	2.28	.77	.013	.00	.00	PIPE

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 8-25-2020 Time:11:55:20

JN 15.1545.2 SANTIAGO CREEK PIT
CITY OF ORANGE
STORM DRAIN LINE-A - MODELED BY CRA

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
997.720	340.626	1.889	342.514	88.41	15.14	3.56	346.08	.00	2.85	3.99	4.000	.000	.00	1 .0
.455	.5720					.0173	.01	1.89	2.21	.77	.013	.00	.00	PIPE
998.175	340.886	1.960	342.846	88.41	14.44	3.24	346.08	.00	2.85	4.00	4.000	.000	.00	1 .0
.395	.5720					.0153	.01	1.96	2.06	.77	.013	.00	.00	PIPE
998.570	341.112	2.035	343.146	88.41	13.77	2.94	346.09	.00	2.85	4.00	4.000	.000	.00	1 .0
.339	.5720					.0135	.00	2.03	1.91	.77	.013	.00	.00	PIPE
998.908	341.306	2.113	343.418	88.41	13.13	2.68	346.09	.00	2.85	3.99	4.000	.000	.00	1 .0
.287	.5720					.0119	.00	2.11	1.78	.77	.013	.00	.00	PIPE
999.195	341.470	2.195	343.665	88.41	12.52	2.43	346.10	.00	2.85	3.98	4.000	.000	.00	1 .0
.239	.5720					.0105	.00	2.20	1.66	.77	.013	.00	.00	PIPE
999.435	341.607	2.282	343.889	88.41	11.93	2.21	346.10	.00	2.85	3.96	4.000	.000	.00	1 .0
.194	.5720					.0092	.00	2.28	1.54	.77	.013	.00	.00	PIPE
999.629	341.718	2.374	344.092	88.41	11.38	2.01	346.10	.00	2.85	3.93	4.000	.000	.00	1 .0
.152	.5720					.0082	.00	2.37	1.43	.77	.013	.00	.00	PIPE
999.781	341.805	2.471	344.276	88.41	10.85	1.83	346.10	.00	2.85	3.89	4.000	.000	.00	1 .0
.112	.5720					.0073	.00	2.47	1.32	.77	.013	.00	.00	PIPE
999.893	341.869	2.574	344.443	88.41	10.34	1.66	346.10	.00	2.85	3.83	4.000	.000	.00	1 .0
.073	.5720					.0064	.00	2.57	1.22	.77	.013	.00	.00	PIPE

JN 15.1545.2 SANTIAGO CREEK PIT
CITY OF ORANGE
STORM DRAIN LINE-A - MODELED BY CRA

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
999.966	341.910	2.684	344.594	88.41	9.86	1.51	346.10	.00	2.85	3.76	4.000	.000	.00	1 .0
.034	.5720					.0057	.00	2.68	1.13	.77	.013	.00	.00	PIPE
1000.000	341.930	2.802	344.732	88.41	9.40	1.37	346.10	.00	2.85	3.66	4.000	.000	.00	1 .0
20.176	.0054					.0054	.11	2.80	1.03	2.80	.013	.00	.00	PIPE
1020.176	342.039	2.802	344.840	88.41	9.40	1.37	346.21	.00	2.85	3.66	4.000	.000	.00	1 .0
26.154	.0054					.0054	.14	2.80	1.03	2.80	.013	.00	.00	PIPE
1046.330	342.180	2.808	344.988	88.41	9.38	1.37	346.35	.22	2.85	3.66	4.000	.000	.00	1 .0
31.938	.0054					.0054	.17	3.03	1.03	2.81	.013	.00	.00	PIPE
1078.268	342.351	2.808	345.160	88.41	9.38	1.37	346.53	.22	2.85	3.66	4.000	.000	.00	1 .0
12.822	.0054					.0053	.07	3.03	1.03	2.81	.013	.00	.00	PIPE
1091.090	342.420	2.850	345.270	88.41	9.23	1.32	346.59	.00	2.85	3.62	4.000	.000	.00	1 .0
JUNCT STR	.0064					.0036	.02	2.85	1.00		.013	.00	.00	PIPE
1095.760	342.450	3.681	346.131	69.64	5.76	.51	346.65	.00	2.52	2.17	4.000	.000	.00	1 .0
53.138	.0054					.0021	.11	3.68	.43	2.37	.013	.00	.00	PIPE
1148.898	342.738	3.454	346.191	69.64	6.04	.57	346.76	.00	2.52	2.75	4.000	.000	.00	1 .0
40.257	.0054					.0023	.09	3.45	.52	2.37	.013	.00	.00	PIPE
1189.156	342.956	3.270	346.226	69.64	6.33	.62	346.85	.00	2.52	3.09	4.000	.000	.00	1 .0
33.104	.0054					.0025	.08	3.27	.59	2.37	.013	.00	.00	PIPE

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 8-25-2020 Time:11:55:20

JN 15.1545.2 SANTIAGO CREEK PIT
CITY OF ORANGE
STORM DRAIN LINE-A - MODELED BY CRA

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1222.260	343.135	3.111	346.246	69.64	6.64	.68	346.93	.00	2.52	3.33	4.000	.000	.00	1 .0
27.949	.0054					.0028	.08	3.11	.66	2.37	.013	.00	.00	PIPE
1250.209	343.286	2.968	346.254	69.64	6.97	.75	347.01	.00	2.52	3.50	4.000	.000	.00	1 .0
23.469	.0054					.0031	.07	2.97	.73	2.37	.013	.00	.00	PIPE
1273.678	343.413	2.838	346.251	69.64	7.31	.83	347.08	.00	2.52	3.63	4.000	.000	.00	1 .0
18.962	.0054					.0034	.07	2.84	.79	2.37	.013	.00	.00	PIPE
1292.639	343.516	2.717	346.233	69.64	7.66	.91	347.14	.00	2.52	3.73	4.000	.000	.00	1 .0
5.319	.0054					.0037	.02	2.72	.87	2.37	.013	.00	.00	PIPE
1297.959	343.545	2.681	346.226	69.64	7.78	.94	347.17	.00	2.52	3.76	4.000	.000	.00	1 .0
HYDRAULIC JUMP														
1297.959	343.545	2.370	345.915	69.64	8.98	1.25	347.17	.00	2.52	3.93	4.000	.000	.00	1 .0
39.235	.0054					.0054	.21	2.37	1.13	2.37	.013	.00	.00	PIPE
1337.194	343.757	2.370	346.127	69.64	8.98	1.25	347.38	.00	2.52	3.93	4.000	.000	.00	1 .0
72.486	.0054					.0053	.39	2.37	1.13	2.37	.013	.00	.00	PIPE
1409.680	344.150	2.389	346.539	69.64	8.90	1.23	347.77	.11	2.52	3.92	4.000	.000	.00	1 .0
15.300	.0052					.0053	.08	2.50	1.11	2.40	.013	.00	.00	PIPE
1424.980	344.230	2.384	346.614	69.64	8.92	1.23	347.85	.00	2.52	3.93	4.000	.000	.00	1 .0
36.615	.0054					.0052	.19	2.38	1.11	2.37	.013	.00	.00	PIPE

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 8-25-2020 Time:11:55:20

JN 15.1545.2 SANTIAGO CREEK PIT
CITY OF ORANGE
STORM DRAIN LINE-A - MODELED BY CRA

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1461.595	344.428	2.421	346.849	69.64	8.75	1.19	348.04	.00	2.52	3.91	4.000	.000	.00	1 .0
13.385	.0054					.0048	.06	2.42	1.08	2.37	.013	.00	.00	PIPE
1474.980	344.500	2.522	347.022	69.64	8.34	1.08	348.10	.00	2.52	3.86	4.000	.000	.00	1 .0
WALL	ENTRANCE													
1474.980	344.500	3.406	347.906	69.64	5.11	.41	348.31	.00	2.11	4.00	4.000	4.000	.00	0 .0

Appendix

G

MISCELLANOUS DRAINAGE SYSTEM CALCULATIONS

Worksheet for 2' BROW DITCH

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.015	
Channel Slope	0.00500	ft/ft
Normal Depth	0.50	ft
Left Side Slope	2.00	ft/ft (H:V)
Right Side Slope	2.00	ft/ft (H:V)

Results

Discharge	1.29	ft^3/s
Flow Area	0.50	ft^2
Wetted Perimeter	2.24	ft
Hydraulic Radius	0.22	ft
Top Width	2.00	ft
Critical Depth	0.48	ft
Critical Slope	0.00612	ft/ft
Velocity	2.58	ft/s
Velocity Head	0.10	ft
Specific Energy	0.60	ft
Froude Number	0.91	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.50	ft
Critical Depth	0.48	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00612	ft/ft

Cross Section for 2' BROW DITCH

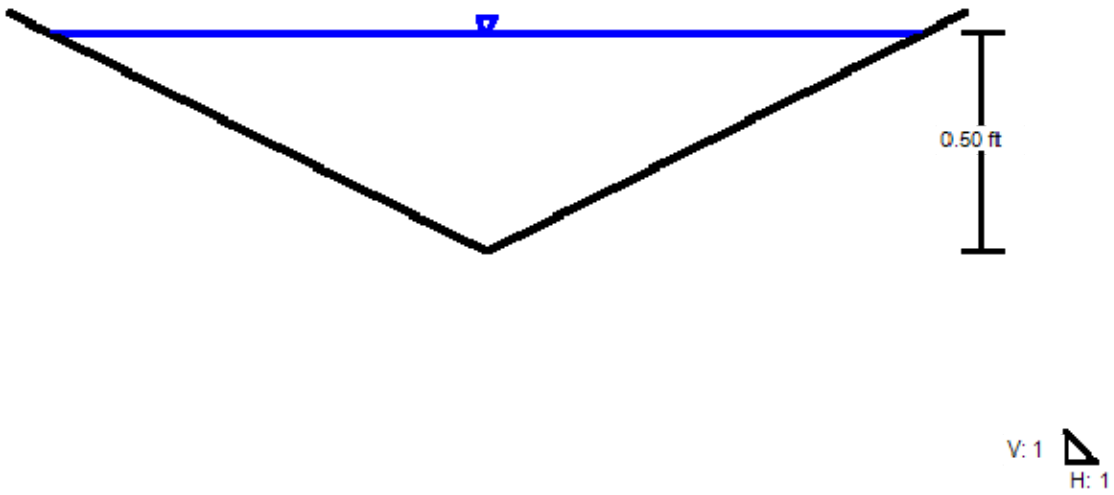
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.015	
Channel Slope	0.00500	ft/ft
Normal Depth	0.50	ft
Left Side Slope	2.00	ft/ft (H:V)
Right Side Slope	2.00	ft/ft (H:V)
Discharge	1.29	ft³/s

Cross Section Image



Attachment K:

Native American Heritage Commission Sacred Lands File Search Response Letter

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NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

September 16, 2021

Jeff Johnson
Pacific BioScience, Inc.

Via Email to: Jeff@pacificbioscience.com

Re: OC Reclamation Mine Project, Orange County

Dear Mr. Johnson:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Orange County
9/16/2021

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 — Gabrieleno
Covina, CA, 91723
Phone: (626) 926 - 4131
admin@gabrielenoindians.org

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 — Gabrieleno
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 — Gabrielino
Los Angeles, CA, 90012
Phone: (951) 807 - 0479
sgoad@gabrielino-tongva.com

Gabrielino Tongva Indians of California Tribal Council
Christina Conley, Tribal Consultant and Administrator
P.O. Box 941078 — Gabrielino
Simi Valley, CA, 93094
Phone: (626) 407 - 8761
christina.marsden@alumni.usc.edu

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Chairperson
P.O. Box 490 — Gabrielino
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com

Gabrielino-Tongva Tribe
Charles Alvarez,
23454 Vanowen Street — Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

Juaneno Band of Mission Indians Acjachemen Nation - Belardes
Matias Belardes, Chairperson
32161 Avenida Los Amigos — Juaneno
San Juan Capisttrano, CA, 92675
Phone: (949) 293 - 8522
kaamalam@gmail.com

Juaneno Band of Mission Indians Acjachemen Nation - Belardes
Joyce Perry, Tribal Manager
4955 Paseo Segovia — Juaneno
Irvine, CA, 92603
Phone: (949) 293 - 8522
kaamalam@gmail.com

Pala Band of Mission Indians
Shasta Gaughen, Tribal Historic Preservation Officer
PMB 50, 35008 Pala Temecula Rd. — Cupeno, Luiseno
Pala, CA, 92059
Phone: (760) 891 - 3515
Fax: (760) 742-3189
sgaughen@palatribe.com

Santa Rosa Band of Cahuilla Indians
Lovina Redner, Tribal Chair
P.O. Box 391820 — Cahuilla
Anza, CA, 92539
Phone: (951) 659 - 2700
Fax: (951) 659-2228
lsaul@santarosa-nsn.gov

Soboba Band of Luiseno Indians
Isaiah Vivanco, Chairperson
P. O. Box 487 — Cahuilla
San Jacinto, CA, 92581 — Luiseno
Phone: (951) 654 - 5544
Fax: (951) 654-4198
ivivanco@soboba-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed OC Reclamation Mine Project, Orange County.

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487
San Jacinto, CA, 92581
Phone: (951) 663 - 5279
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

Cahuilla
Luiseno

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed OC Reclamation Mine Project, Orange County.

Attachment L:

Mitigation Measures

Mitigation Measures Required for Project Implementation

Number	Mitigation Measure	Time Frame and Responsible Party for Implementation
BIO-1	**Implementation of Conditions Established in Biological Opinion**: A restoration plan that satisfies the requirements set forth in the Biological Opinion issued by the USFWS, dated February 5th, 2019, will be reviewed and approved by the Service (USFWS) identifying specific locations where restoration will occur, timeline for methodology to implement the proposed restoration, and quantitative performance criteria that will be achieved for the restoration to be determined successful.	Prior to issuance of grading permit; Applicant
BIO-2	**Qualified Biological Monitor**: A designated Project Biologist approved by the Service (USFWS) will monitor construction activities to ensure that all avoidance and minimization measures are properly followed. The Applicant will submit the biologist's name, address, telephone number, and work schedule on the project to the Service prior to initiating project impacts. The Project Biologist will be provided with a copy of the incidental take permit for the Project and will attend all preconstruction meetings, be present during all vegetation clearing activities, monitor construction activities during phase one on a weekly basis, and monitor activities during phase two on a monthly basis.	During construction activities; Applicant
CR-1	**Qualified Archeologist/Paleontologist Monitor:** During the initial 2-month construction phase involving grading and earthwork activities, a qualified archaeological and paleontological monitor shall be present on-site. In the event of a discovery of an archaeological or paleontological resource, the monitor shall have the discretion to halt all ground disturbing activities within 50 feet of the find until it has been evaluated for significance. If the find is determined to have archaeological or paleontological significance, the qualified monitor shall make recommendations to the Lead Agency on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines. Potentially significant cultural resources consist of but are not limited to stone, faunal bones, fossils, wood, or shell artifacts	During initial grading and earthwork activities; Applicant

	or features, including hearths, structural remains, or historic dumpsites. Any previously undiscovered resources found during construction within the project area should be recorded on appropriate Department of Parks and Recreation (DPR) forms and evaluated for significance in terms of CEQA criteria.	
TCR-1	**<u>Retain a Native American Monitor Prior to Commencement of Ground-Disturbing Activities:</u>** A. The project applicant/lead agency shall retain a Native American Monitor from or approved by the Gabrieleño Band of Mission Indians – Kizh Nation. The monitor shall be retained prior to the commencement of any "ground-disturbing activity" for the subject project at all project locations (i.e., both on-site and any off-site locations that are included in the project description/definition and/or required in connection with the project, such as public improvement work). "Ground-disturbing activity" shall include, but is not limited to, demolition, pavement removal, potholing, auguring, grubbing, tree removal, boring, grading, excavation, drilling, and trenching. B. A copy of the executed monitoring agreement shall be submitted to the lead agency prior to the earlier of the commencement of any ground-disturbing activity, or the issuance of any permit necessary to commence a ground-disturbing activity. C. The monitor will complete daily monitoring logs that will provide descriptions of the relevant ground-disturbing activities, the type of construction activities performed, locations of ground-disturbing activities, soil types, cultural-related materials, and any other facts, conditions, materials, or discoveries of significance to the Tribe. Monitor logs will identify and describe any discovered TCRs, including but not limited to, Native American cultural and historical artifacts, remains, places of significance, etc., (collectively, tribal cultural resources, or "TCR"), as well as any discovered Native American (ancestral) human remains and burial goods. Copies of monitor logs will be provided to the project applicant/lead agency upon written request to the Tribe. D. On-site tribal monitoring shall conclude upon the latter of the following (1) written confirmation to the Kizh from a designated point of contact for the project applicant/lead agency that all ground-disturbing activities and phases that may involve ground-disturbing activities on the project site or in connection with the project are complete; or (2) a determination and written notification by the Kizh to the project applicant/lead agency that no future, planned construction activity and/or development/construction phase at the project site possesses the potential to impact Kizh TCRs. E. Upon discovery of any TCRs, all construction activities in the immediate vicinity of the discovery shall cease (i.e., not less than the surrounding 50 feet) and shall not resume until the	Prior to commencement of any "ground-disturbing activity"; Applicant

	discovered TCR has been fully assessed by the Kizh monitor and/or Kizh archaeologist. The Kizh will recover and retain all discovered TCRs in the form and/or manner the Tribe deems appropriate, in the Tribe's sole discretion, and for any purpose the Tribe deems appropriate, including for educational, cultural and/or historic purposes.	
TCR-2	**Unanticipated Discovery of Human Remains and Associated Funerary Objects** A. Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in Public Resources Code Section 5097.98, are also to be treated according to this statute. B. If Native American human remains and/or grave goods discovered or recognized on the project site, then all construction activities shall immediately cease. Health and Safety Code Section 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and all ground-disturbing activities shall immediately halt and shall remain halted until the coroner has determined the nature of the remains. If the coroner recognizes the human remains to be those of a Native American or has reason to believe they are Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission, and Public Resources Code Section 5097.98 shall be followed. C. Human remains and grave/burial goods shall be treated alike per California Public Resources Code section 5097.98(d)(1) and (2). D. Construction activities may resume in other parts of the project site at a minimum of 200 feet away from discovered human remains and/or burial goods, if the Kizh determines in its sole discretion that resuming construction activities at that distance is acceptable and provides the project manager express consent of that determination (along with any other mitigation measures the Kizh monitor and/or archaeologist deems necessary). (CEQA Guidelines Section 15064.5(f).) E. Preservation in place (i.e., avoidance) is the preferred manner of treatment for discovered human remains and/or burial goods. Any historic archaeological material that is not Native American in origin (non-TCR) shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it shall be offered to a local school or historical society in the area for educational purposes. F. Any discovery of human remains/burial goods shall be kept confidential to prevent further disturbance.	During construction activities; Applicant

TCR-3	**Procedures for Burials and Funerary Remains:** A. As the Most Likely Descendant ("MLD"), the Koo-nas-gna Burial Policy shall be implemented. To the Tribe, the term "human remains" encompasses more than human bones. In ancient as well as historic times, Tribal Traditions included, but were not limited to, the preparation of the soil for burial, the burial of funerary objects with the deceased, and the ceremonial burning of human remains. B. If the discovery of human remains includes four or more burials, the discovery location shall be treated as a cemetery and a separate treatment plan shall be created. C. The prepared soil and cremation soils are to be treated in the same manner as bone fragments that remain intact. Associated funerary objects are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later; other items made exclusively for burial purposes or to contain human remains can also be considered as associated funerary objects. Cremations will either be removed in bulk or by means as necessary to ensure complete recovery of all sacred materials. D. In the case where discovered human remains cannot be fully documented and recovered on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to recommend diverting the project and keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials will be removed. E. In the event preservation in place is not possible despite good faith efforts by the project applicant/developer and/or landowner, before ground-disturbing activities may resume on the project site, the landowner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects. F. Each occurrence of human remains and associated funerary objects will be stored using opaque cloth bags. All human remains, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items should be retained and reburied within six months of recovery. The site of reburial/repatriation shall be on the project site but at a location agreed upon between the Tribe and the landowner at a site to be protected in perpetuity. There shall be no publicity regarding any cultural materials recovered. G. The Tribe will work closely with the project's qualified archaeologist to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be prepared and shall include (at a minimum) detailed descriptive notes and sketches. All data	During construction activities; Applicant

	recovery data recovery-related forms of documentation shall be approved in advance by the Tribe. If any data recovery is performed, once complete, a final report shall be submitted to the Tribe and the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive and/or destructive diagnostics on human remains.	